

4171

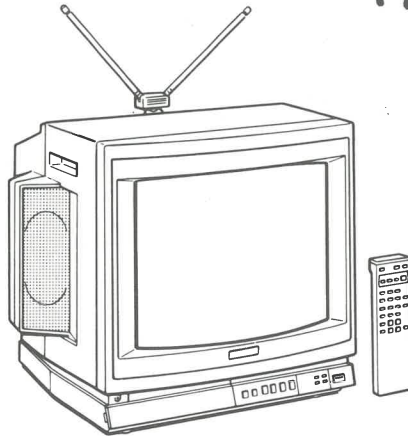
# KV-1380R

RM-731

## SERVICE MANUAL

~~4120~~

*US Model*  
Chassis No. SCC-754D-A



## P3 CHASSIS

March, 1986

### SPECIFICATIONS

Television system American TV standards  
Channel coverage VHF: 2-13  
UHF: 14-69  
Cable TV: 1-125  
Picture tube Trinitron tube  
**13-inch picture measured diagonally**  
14-inch picture tube measured diagonally  
90-degree deflection  
Input Audio R/L  
phono jack, 408 mVrms (100% modulation), more than 47 k ohms  
Video  
phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative  
Output Audio R/L  
phono jack, 408 mVrms (100% modulation)

Power requirements 120 V AC, 60 Hz  
Power consumption 100 W (max.)  
Accessories supplied Remote Commander RM-731 with 2 size AA batteries  
VHF/UHF telescopic dipole antenna AN-18  
Antenna connector (300 ohm to 75 ohm matching transformer)  
Optional accessories U/V mixer EAC-66  
Connecting cord RK-74A VMC-2P3

Design and specifications are subject to change without notice.



# TRINITRON® COLOR TV

# SONY®




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### WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS. THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

### SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).  
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

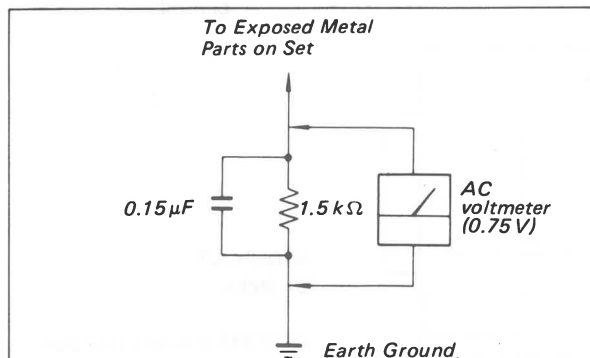


Fig. A. Using an AC voltmeter to check AC leakage.

## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

## HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

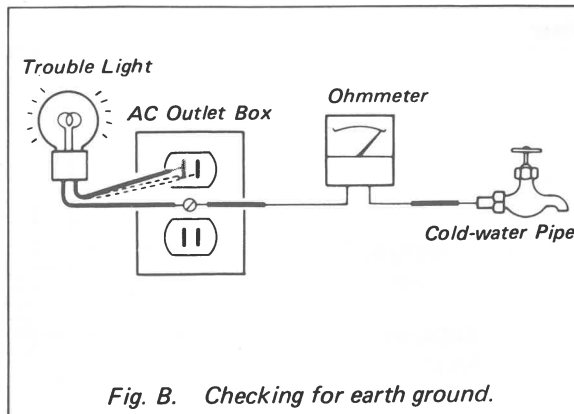


Fig. B. Checking for earth ground.

## SECTION 1 GENERAL

### 1-1. LOCATION OF CONTROLS

#### Front

##### On-screen display indicates

- Channel numbers
- "MUTING" or "SLEEP" indications
- "VIDEO" mode
- "MAIN", "SAP", or "BOTH" modes
- "EXT-A" mode
- TIMER/BLOCK settings

##### Item display indicates

- the item being adjusted
- the time according to the internal clock

**Adjustment display** indicates the level of adjustment being made to the sound and picture.

**headphones jack (stereo minijack)**

Open the panel.

Indoor antenna

Remote control detector

TIMER indicator

VIDEO indicator

SLEEP indicator

STEREO indicator

POWER switch

CHANNEL scan buttons

VOLUME buttons

TV/VIDEO button

TIMER/BLOCK button

EXT (external) AUDIO button

AUTO STEREO button

MTS (Multichannel) TV Sound button

ADD button

ERASE button

PICTURE buttons

CABLE selector

HUE control

COLOR control

BRIGHT (brightness) control

#### Rear

VIDEO IN jack

AUDIO IN R/L jacks

AUDIO OUT R/L jacks

VHF/UHF antenna terminal



## 1-2. TIMER/BLOCK

**Internal clock**

Once the internal clock is set, the current time will appear on the screen. It is necessary to set the clock correctly to activate the program start TIMER and channel BLOCK.

**Program start TIMER**

Makes a program of your choice appear on the screen automatically.

**Channel BLOCK**

Blocks a channel from appearing on the screen for 12 hours. Use channel BLOCK to prevent children from watching undesirable programs.

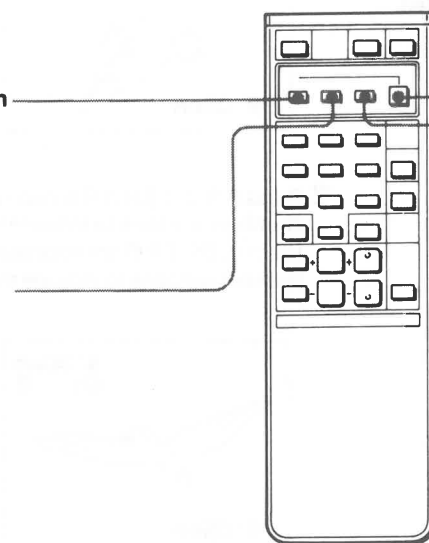
The buttons used for setting the internal clock, program start TIMER and channel BLOCK are located on the Remote Commander.

**TIMER OFF/REPEAT button**

Used to deactivate or reactivate the program start TIMER.

**CLEAR button**

Used to erase the time and channel number from the set's memory.

**TIMER/BLOCK button**

Used to change the "pages". See next page. This button and the TIMER/BLOCK button on the TV are operated in the same way.

**AM/PM button**

Each time this button is pressed, the on-screen "AM" and "PM" indications will appear alternately. Remote Commander

**Notes**

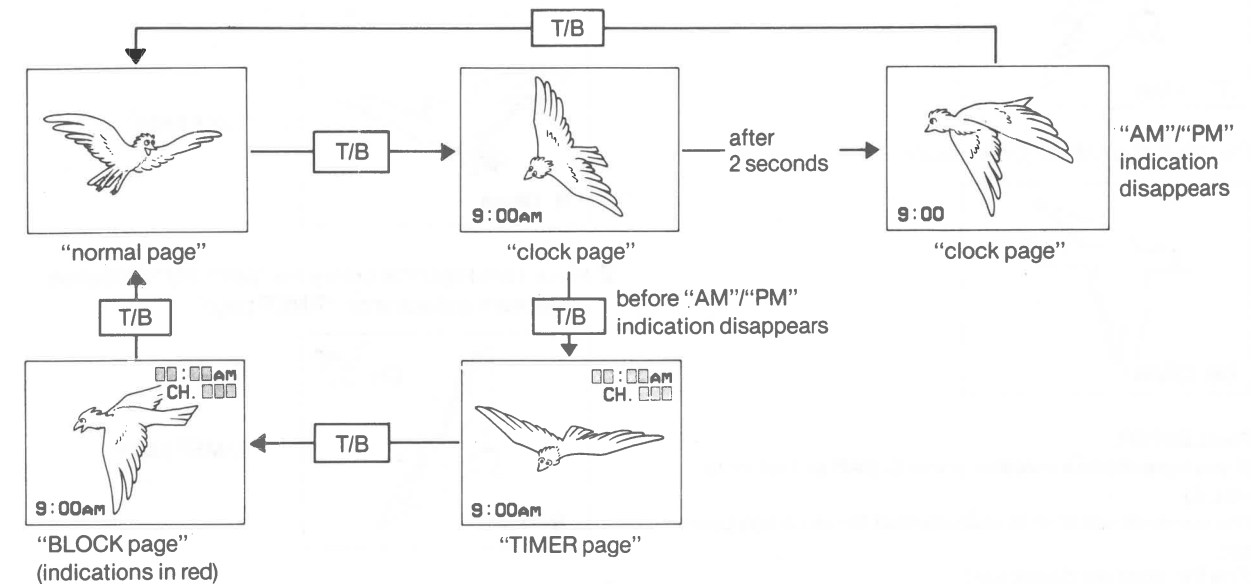
- All settings will be erased from the set's memory if the set is unplugged, or if a power failure occurs.
- The TIMER and BLOCK will operate only if the clock is set correctly.
- If the TIMER and BLOCK are set for overlapping times on the same channel, the blocked channel will appear on the screen at the time set on the TIMER.

To set the internal clock, program start TIMER and channel BLOCK, you must summon the corresponding "pages": "clock page", "TIMER page" and "BLOCK page".

To change the "pages", press the TIMER/BLOCK button as illustrated below.

The illustration shows how to change the "pages" after the clock has been set.

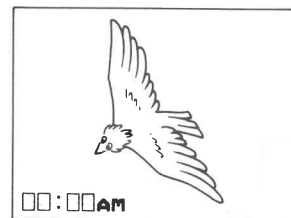
T/B stands for "Press the TIMER/BLOCK button."



**HOW TO SET THE INTERNAL CLOCK**

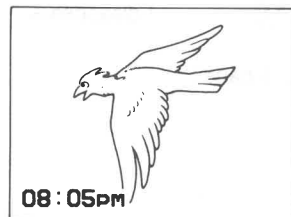
Ex. To set the clock to 8:05 PM, follow the steps below.

- 1 Press TIMER/BLOCK once to change from "normal page" to "clock page".



"clock page"

- 2 Press 0, 8, 0, 5 AM/PM (0 necessary).



- 3 Press ENTER.

(If you have made a mistake, press CLEAR and return to step 2.)  
The numbers will blink to indicate that the clock has been set.  
(The 0 in front will disappear.)



THE "AM"/"PM" indication will disappear after 2 seconds.

To summon "TIMER page", press TIMER/BLOCK **before** the "AM"/"PM" indication disappears.  
To return to "normal page", press TIMER/BLOCK **after** the "AM"/"PM" indication has disappeared.

To reset the clock, summon "clock page" and press CLEAR before the "AM"/"PM" indication disappears.  
Then follow the steps above from step 2.

**Note**

12:00 AM stands for midnight.  
12:00 PM stands for noon.

**HOW TO SET THE PROGRAM START TIMER**

Make sure that the clock has been set correctly before setting the program start TIMER.

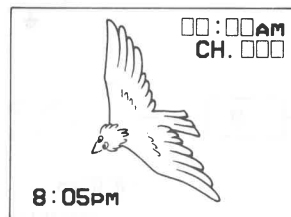
Ex. To set the TIMER for a program which begins at 10:30 PM on channel 12, follow the steps below.

- 1 Press TIMER/BLOCK once to change from "normal page" to "clock page."



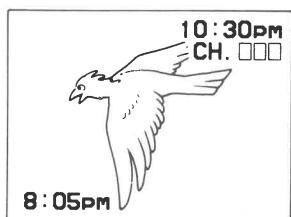
"clock page"

- 2 Press TIMER/BLOCK before the "AM"/"PM" indication disappears and summon "TIMER page".

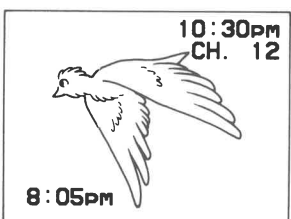


"TIMER page"

- 3 Press 1, 0, 3, 0, AM/PM, ENTER.  
Numbers will blink to indicate that the time has been set.



- 4 Press 1, 2, ENTER (0 not necessary).  
Numbers will blink to indicate that the channel has been set.



The TIMER indicator will light up to indicate that the TIMER has been set.  
If you have made a mistake, press CLEAR and return to step 3.

At the preset time, the selected channel will appear on the screen and the TIMER indicator will go out. The TIMER will operate whether you are watching a TV program or a VCR playback, or even if you have turned off the TV.  
If no button \* is pressed within 2 hours after the preset time, an "OFF" indication will appear on the screen for 1 minute. If a button \* is still not touched during the 1 minute, the TV will turn off automatically as a safety precaution.

\* AUTO STEREO button and HUE, COLOR, BRIGHT controls excepted.

The TIMER operates only once, but the time and the channel will remain in the set's memory.

If, at a future date, you want to see the same channel at the same time, press TIMER OFF/REPEAT. The TIMER indicator will light up to indicate that the TIMER has been reactivated.

If you want to deactivate the TIMER press TIMER OFF/REPEAT again so that the TIMER indicator goes out. It is not necessary to summon "TIMER page" to use the TIMER OFF/REPEAT button. Furthermore, this button is effective even if the TV has been turned off.

To clear the TIMER setting, summon "TIMER page" and press CLEAR.

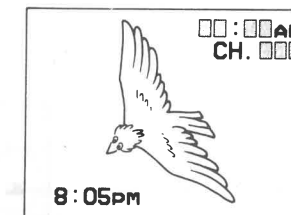
To reset, clear the setting and follow the steps on the previous page from step 3.

**HOW TO SET THE CHANNEL BLOCK**

Make sure that the clock has been set correctly before setting the channel BLOCK.

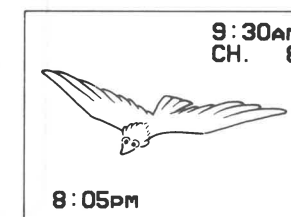
Ex. To set the BLOCK for a program which begins at 9:30 AM on channel 8, follow the steps below.

- 1 Press TIMER/BLOCK three times to change from "normal page" to "BLOCK page".



"BLOCK page"  
(indications in red)

- 2 Press 0, 9, 3, 0, ENTER (0 necessary).  
Numbers will blink to indicate that the time has been set.  
Press 8, ENTER (0 not necessary).  
Number will blink to indicate that the channel has been set.



The BLOCK has now been set.  
If you have made a mistake, press CLEAR and return to step 2.

At the preset time, the picture of the selected channel will be blocked from view and the sound will be muted. A red "BLOCKED" indication will appear on the screen while the channel is blocked.  
Normal reception will be resumed after 12 hours.  
To return to normal reception while the channel is blocked, recall "BLOCK page" and press CLEAR.

The BLOCK setting blocks a specified channel for the same 12-hour period everyday.

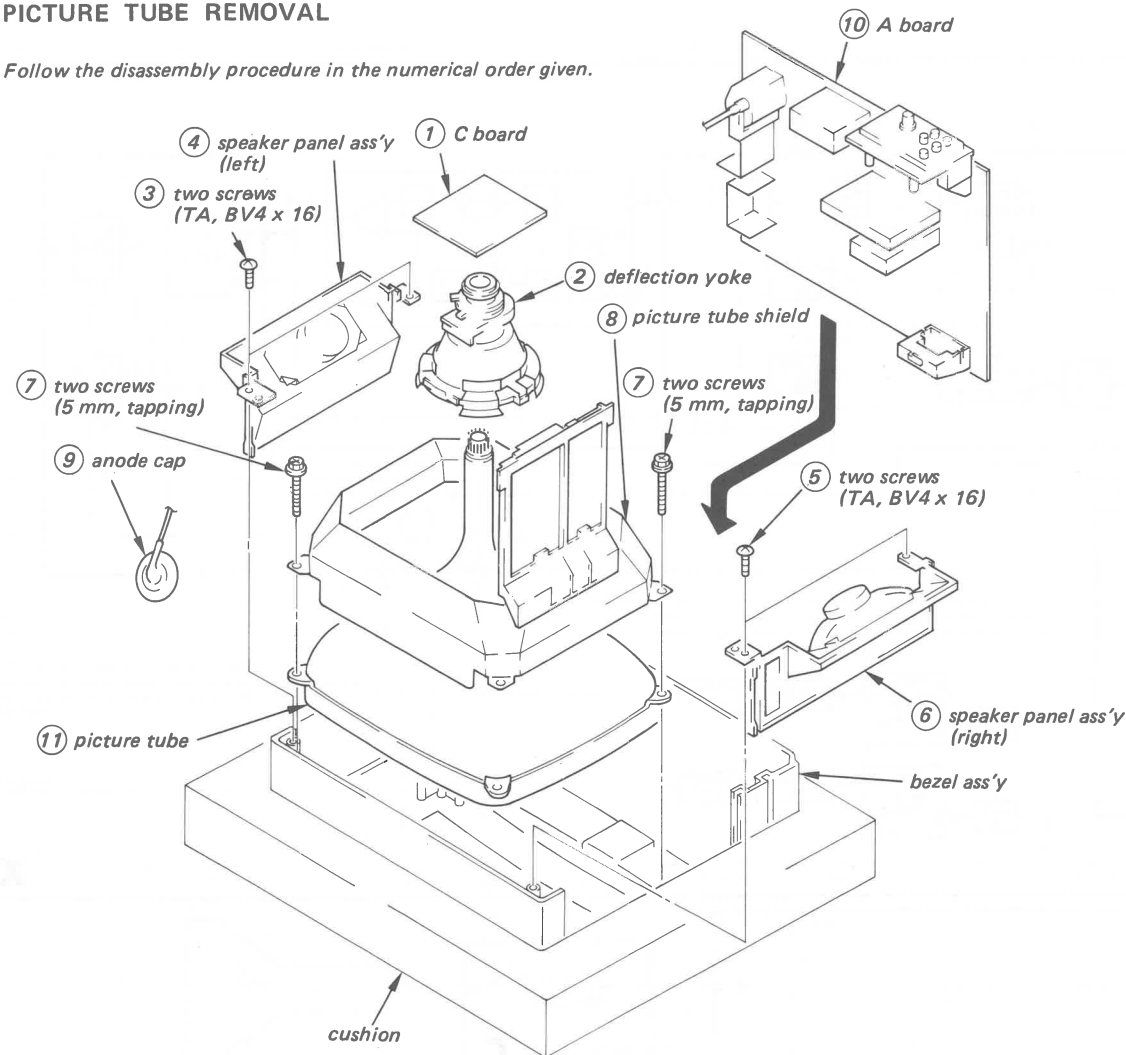
To clear the BLOCK setting, summon "BLOCK page" and press CLEAR.

To reset, clear the setting and follow the steps above from step 2.

## SECTION 2 DISASSEMBLY

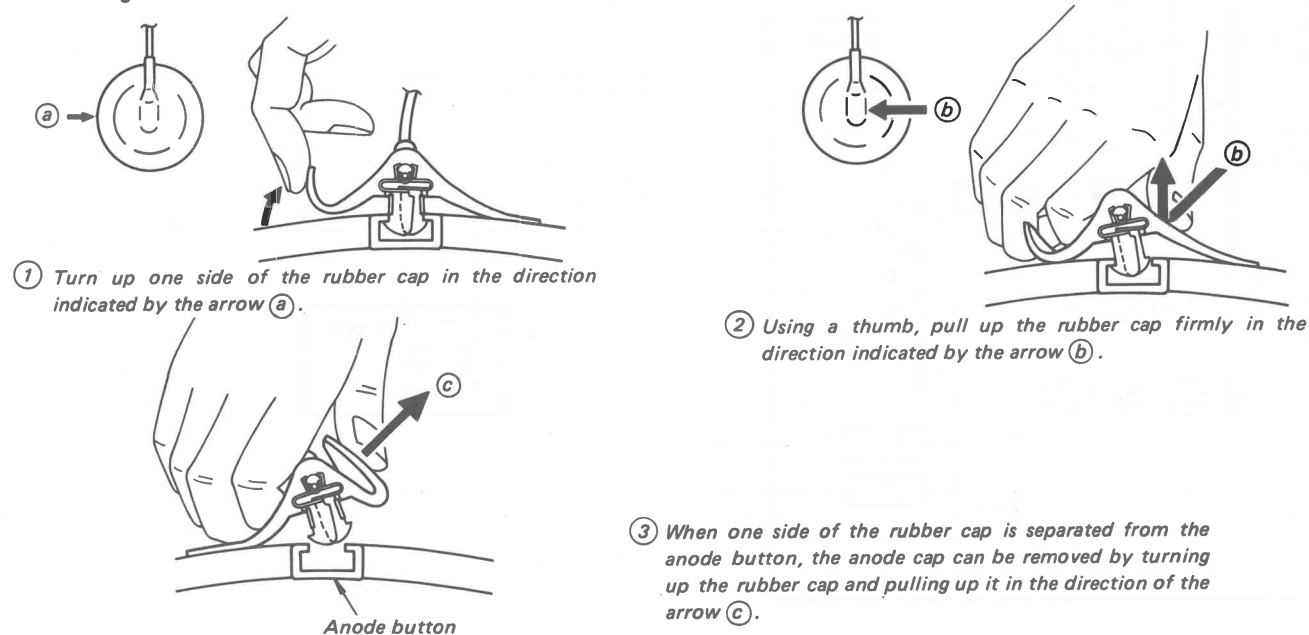
### 2-1. PICTURE TUBE REMOVAL

Note: Follow the disassembly procedure in the numerical order given.



### 2-2. ANODE CAP REMOVAL

#### • Removing Procedures



## SECTION 3 CIRCUIT ADJUSTMENT

### 3-1. SAFETY RELATED ADJUSTMENTS

#### ✕ R524 ADJUSTMENT (HOLD DOWN)

When replacing the following components (marked with ✕ on the schematic diagram), perform the adjustment as follows.

R521, R522, R523, R524, R530, R534, C307, C524, D502, D512, T503, IC301

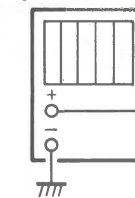
1. Receive the dot signal  
PICTURE VR . . . . MIN  
BRIGHT VR . . . . MIN
2. +B voltage check  
Confirm that the +B voltage (135V Line) is less than  $136.2 \text{ Vdc}$  during input of  $130 \begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix} \text{ Vac}$ .
3. Protector voltage check  
Confirm that a voltage of  $20.0 \begin{smallmatrix} +1.3 \\ -1.7 \end{smallmatrix} \text{ Vdc}$  appears between TP85 and ground during input of  $120 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix} \text{ Vac}$ .
4. Operation check  
Confirm that the hold-down circuit operates (the raster diss appears) by adding  $22.75 \begin{smallmatrix} +0 \\ -0.05 \end{smallmatrix} \text{ Vdc}$  between TP85 and ground.
5. Receive the dot signal.
6. Short IC601 pins (3) and (4).
7. Input of  $120 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix} \text{ Vac}$ .
8. Error operation check.  
Confirm that, applying  $139 \pm 0.5 \text{ Vdc}$  to +B voltage (135V Line), the hold-down circuit does not operate when changing the channel.

\* Use a digital multimeter whose input impedance is over  $100 \text{ M}\Omega$  when confirming the voltage of TP85.

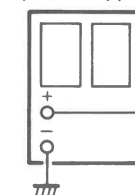
#### CHECK AFTER IC601 REPLACEMENT

1. Supply  $130 \begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix} \text{ Vac}$  to with variable auto-transformer.
2. Receive the dot signal.
3. PICTURE VR . . . . MIN  
BRIGHT VR . . . . MIN
4. Confirm that the +B voltage (135V Line) is less than  $136.2 \text{ Vdc}$ .
5. If step 4 is not satisfied, replace IC601 in A board and repeat above steps.

digital multimeter



regulated-dc power supply




TP85  
HV PROT

SECTION 3  
CIRCUIT ADJUSTMENT

## 3-1. SAFETY RELATED ADJUSTMENTS

## R524 ADJUSTMENT (HOLD DOWN)

When replacing the following components (marked with  on the schematic diagram), perform the adjustment as follows.

R521, R522, R523, R524, R530, R534, C307, C524, D502, D512, T503, IC301

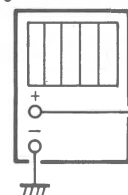
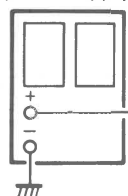
1. Receive the dot signal  
PICTURE VR..... MIN  
BRIGHT VR..... MIN
2. +B voltage check  
Confirm that the +B voltage (135V Line) is less than 136.2 Vdc during input of  $130 \begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix}$  Vac.
3. Protector voltage check  
Confirm that a voltage of  $20.0 \begin{smallmatrix} +1.3 \\ -1.7 \end{smallmatrix}$  Vdc appears between TP85 and ground during input of  $120 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}$  Vac.
4. Operation check  
Confirm that the hold-down circuit operates (the raster diss appears) by adding  $22.75 \begin{smallmatrix} +0 \\ -0.05 \end{smallmatrix}$  Vdc between TP85 and ground.
5. Receive the dot signal.
6. Short IC601 pins (3) and (4).
7. Input of  $120 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}$  Vac.
8. Error operation check.  
Confirm that, applying  $139 \pm 0.5$  Vdc to +B voltage (135V Line), the hold-down circuit does not operate when changing the channel.

\* Use a digital multimeter whose input impedance is over 100 M $\Omega$  when confirming the voltage of TP85.

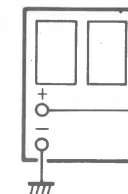
## CHECK AFTER IC601 REPLACEMENT

1. Supply  $130 \begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix}$  Vac to with variable auto-transformer.
2. Receive the dot signal.
3. PICTURE VR..... MIN  
BRIGHT VR..... MIN
4. Confirm that the +B voltage (135V Line) is less than 136.2 Vdc.
5. If step 4 is not satisfied, replace IC601 in A board and repeat above steps.

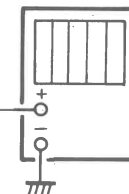
digital multimeter

regulated-dc  
power supplyTP85  
HV PROT

TP91

regulated-dc  
power supply

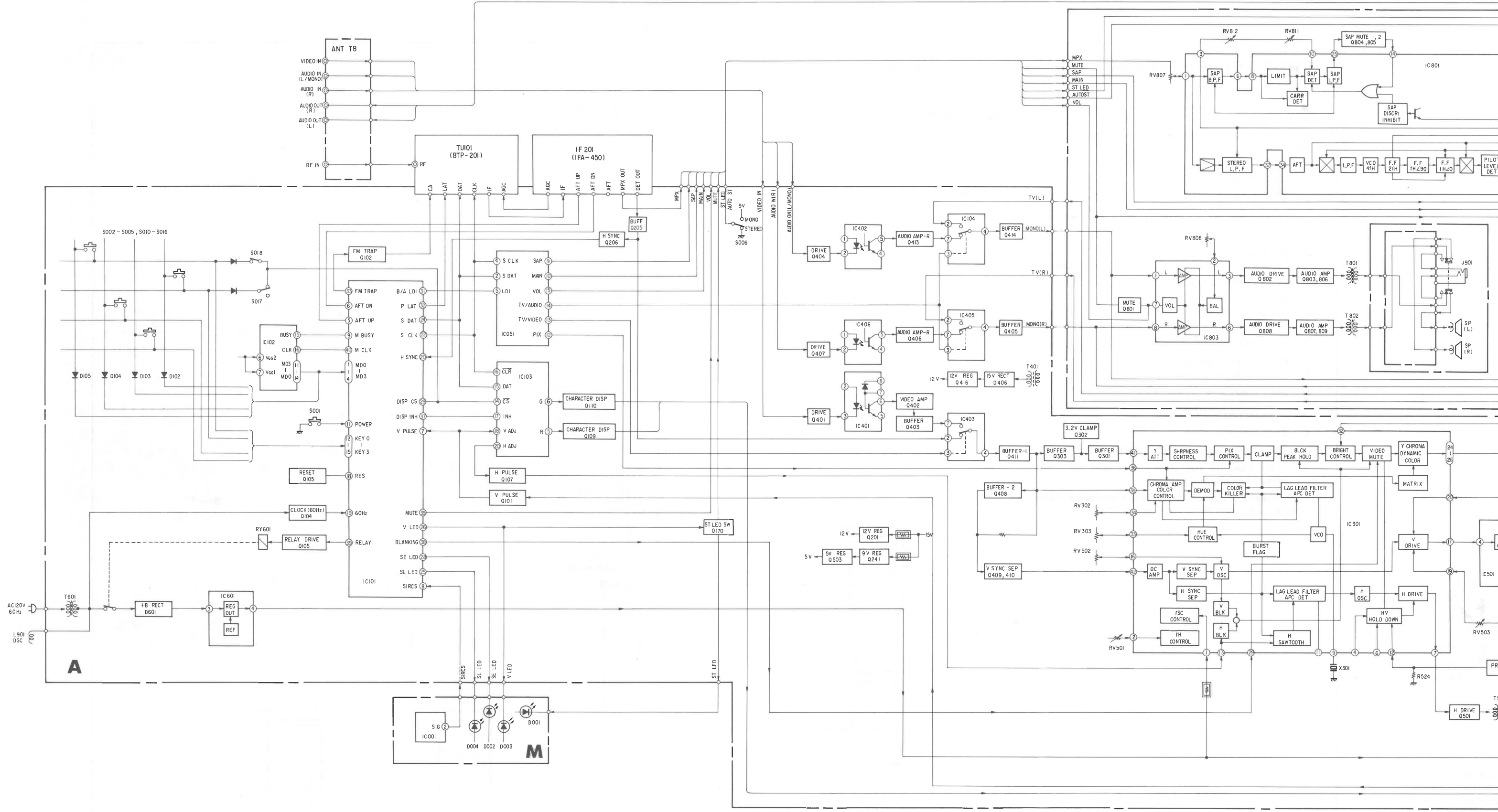
digital multimeter



A Board

SECTION 4  
DIAGRAM

4-1. BLOCK DIAGRAM







## SECTION 5

### EXPLODED VIEWS

## NOTE:

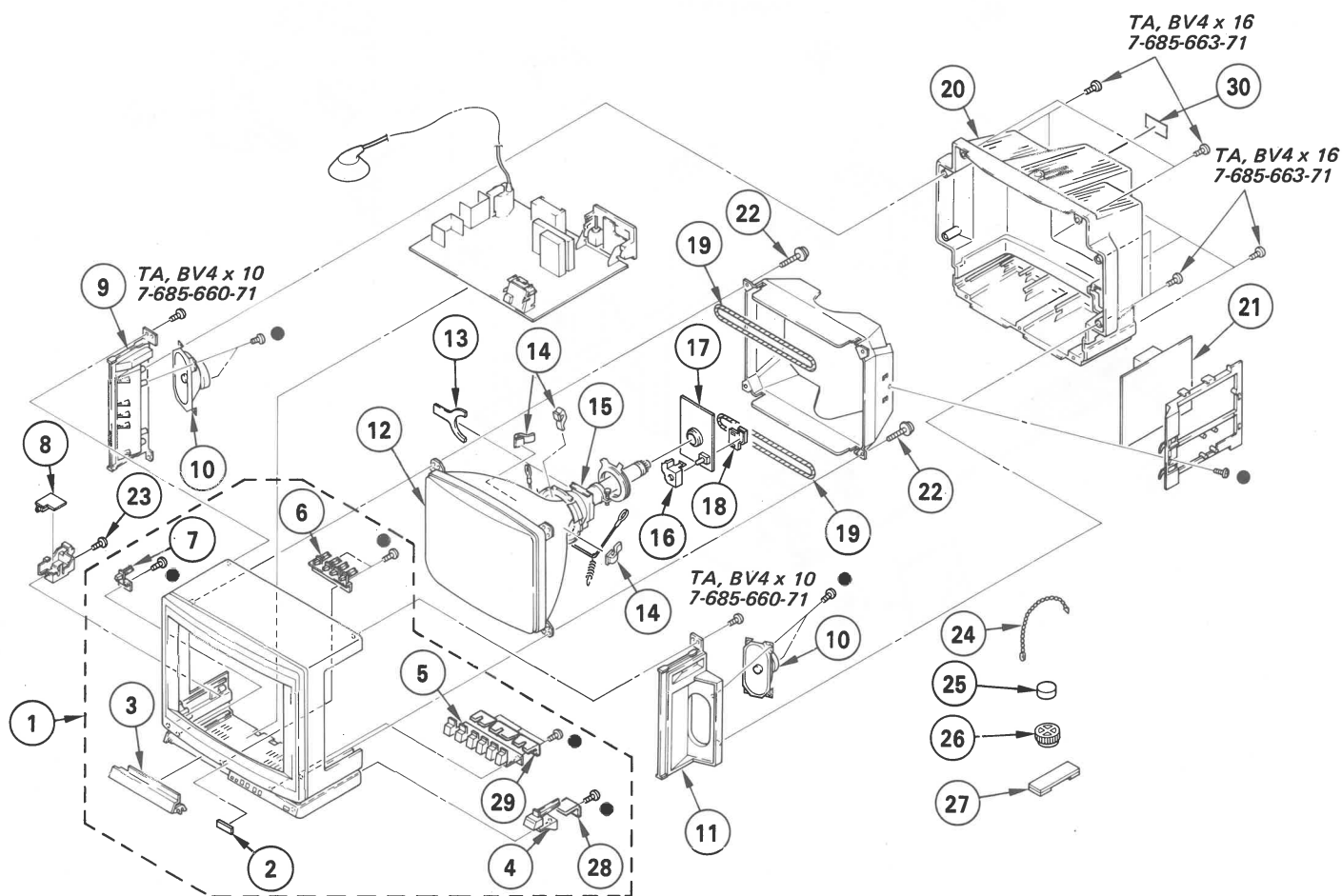
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark **▲** are critical for safety. Replace only with part number specified.

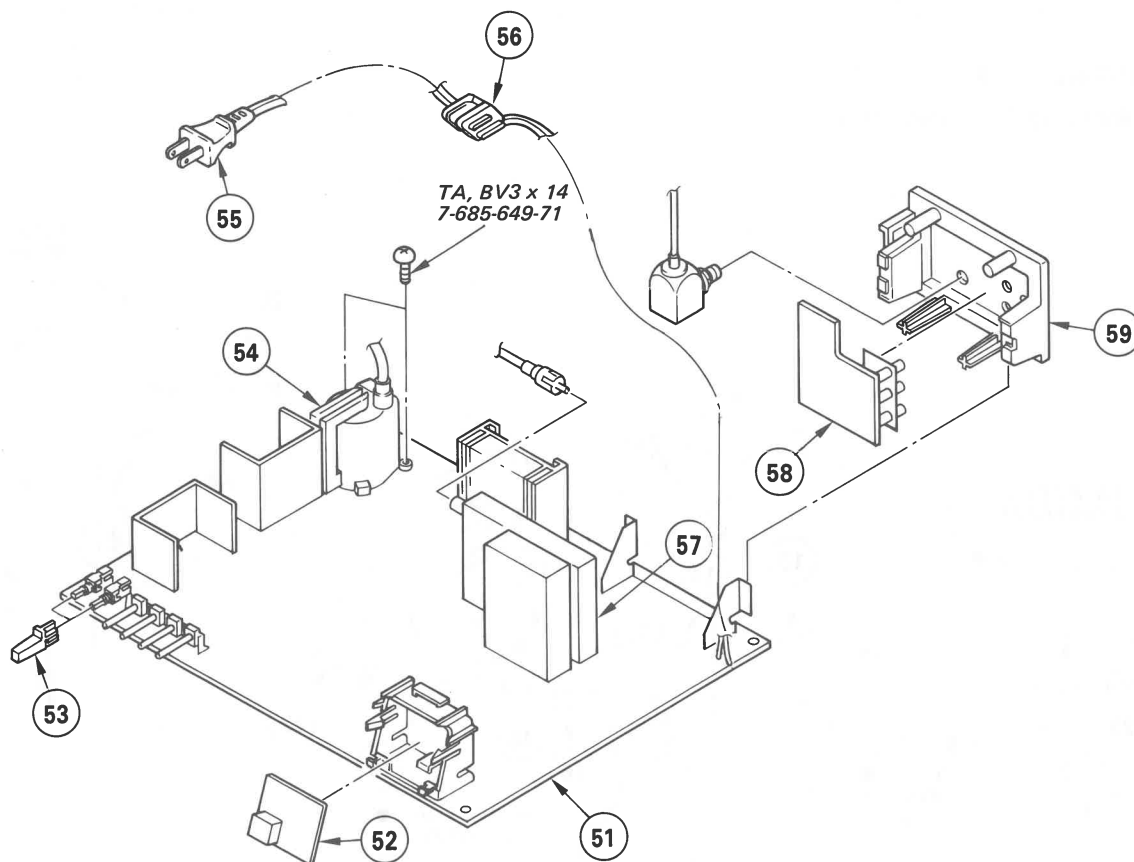
## 5-1. PICTURE TUBE

●: TA, BV3 x 12      7-685-648-71



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-4379-906-1	BEZEL ASSY	2, 3, 4, 5, 6, 7, 28, 29	15	▲1-451-234-12	DEFLECTION YOKE (SY-125A)	
2	4-378-208-01	EMBLEM, SONY		16	*4-374-912-01	COVER (MAIN), CV VOL	
3	X-4379-902-1	DOOR ASSY, CONTROL		17	*A-1330-601-A	C BOARD, COMPLETE	
4	4-379-910-01	BUTTON, POWER		18	*4-374-913-01	COVER (REAR LID), CV VOL	
5	4-379-921-01	BUTTON, UP/DOWN		19	▲1-426-146-31	COIL, DEMAGNETIZATION	
6	4-379-909-01	BUTTON, MULTI		20	4-379-917-01	COVER, REAR	
7	4-379-902-01	BUTTON, MTS		21	*A-1386-027-A	X BOARD, COMPLETE	
8	*1-617-797-11	Z BOARD		22	4-365-808-00	SCREW (5), TAPPING	
9	X-4379-903-1	PANEL (LEFT) ASSY, SPEAKER		23	3-703-083-00	+ BV 3X25	
10	1-503-605-11	SPEAKER		24	4-308-870-00	CLIP, LEAD WIRE	
11	X-4379-904-1	PANEL (RIGHT) ASSY, SPEAKER		25	1-452-032-00	MAGNET, DISK; 10MM Ø	
12	▲8-735-553-05	CRT (A34JBU10X)		26	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø	
13	1-452-277-00	MAGNET, BMC		27	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	
14	3-703-961-01	SPACER, DY		28	*4-379-925-01	PLATE (B), STOPPER	
				29	*4-379-926-01	PLATE (A), STOPPER	
				30	*4-302-759-00	LABEL, SERIAL NUMBER	

## 5-2. CHASSIS



No.	Part No.	Description
51	*A-1296-121-A	A BOARD, COMPLETE
52	*1-617-796-11	M BOARD
53	4-379-901-01	BUTTON, SW
54	△.1-439-314-22	TRANSFORMER ASSY, FLYBACK
55	△.1-551-603-11	CORD, POWER

Remark	No.	Part No.	Description	Remark
	56	△.4-022-115-01	HOLDER, AC CORD	
	57	△.1-463-603-11	TUNER, ET (BTP-201)	
	58	*1-618-661-21	U BOARD	
	59	△.1-536-988-11	TERMINAL BOARD ASSY, ANTENNA	

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.



# SECTION 6

## ELECTRICAL PARTS LIST

A

## NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

When indicating parts by reference number, please include the board name.

## CAPACITORS

- MF :  $\mu$ F, PF :  $\mu$  $\mu$ F

## COILS

- MMH : mH, UH :  $\mu$ H

## RESISTORS

- All resistors are in ohms
- F : nonflammable

- The components identified by **A** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
	*A-1296-121-A	A BOARD, COMPLETE *****		C128	1-102-106-00	CERAMIC 100PF	10% 50V
	3-701-833-01	HEAD, WASHER, TAPPING SCREW		C129	1-102-963-00	CERAMIC 33PF	5% 50V
	4-302-428-00	HEAD, WASHER, TAPPING SCREW		C130	1-102-112-00	CERAMIC 330PF	10% 50V
	*4-363-404-00	HOLDER, IC		C132	1-123-308-00	ELECT 220MF	20% 10V
	4-365-216-00	SPACER, MICA		C133	1-123-332-00	ELECT 47MF	20% 16V
	CONNECTOR			C134	1-123-318-00	ELECT 33MF	20% 16V
A1	*1-564-444-11	PLUG, CONNECTOR (2.5MM) 8P		C135	1-123-310-00	ELECT 470MF	20% 10V
A2	*1-564-442-11	PLUG, CONNECTOR (2.5MM) 6P		C136	1-119-160-00	ELECT 470MF	10V
A3	*1-508-765-00	3P PLUG (M)		C201	1-123-333-00	ELECT 100MF	20% 16V
A4	*1-508-786-00	2P PLUG (M)		C202	1-123-318-00	ELECT 33MF	20% 16V
A5	*1-564-353-00	PLUG, CONNECTOR (2.5MM) 2P			4-354-556-00	CAP (DIA. 5); C202	
A6	*1-508-766-00	4P PLUG (M)		C210	1-101-003-00	CERAMIC 0.0047MF	50V
A7	*1-508-786-00	2P PLUG (M)		C211	1-101-003-00	CERAMIC 0.0047MF	50V
A8	*1-506-348-XX	3P PLUG (L)		C217	1-123-321-00	ELECT 220MF	20% 16V
A9	*1-564-442-11	PLUG, CONNECTOR (2.5MM) 6P		C230	1-123-332-00	ELECT 47MF	20% 16V
A10	*1-564-442-11	PLUG, CONNECTOR (2.5MM) 6P		C231	1-123-380-00	ELECT 1MF	20% 50V
DY1	*1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P		C241	1-123-332-00	ELECT 47MF	20% 16V
R524	*1-506-371-00	2P PLUG (L)		C257	1-102-121-00	CERAMIC 0.0022MF	10% 50V
	CAPACITOR			C258	1-108-794-91	MYLAR 0.0015MF	5% 50V
C051	1-123-307-00	ELECT 100MF	20% 10V	C302	1-123-332-00	ELECT 47MF	20% 16V
C052	1-123-333-00	ELECT 100MF	20% 16V	C303	1-123-323-00	ELECT 470MF	20% 16V
C053	1-101-003-00	CERAMIC 0.0047MF	50V	C304	1-123-330-00	ELECT 22MF	20% 25V
C054	1-123-308-00	ELECT 220MF	20% 10V	C305	1-123-381-00	ELECT 2.2MF	20% 50V
C101	1-123-330-00	ELECT 22MF	20% 25V	C306	1-101-004-00	CERAMIC 0.01MF	50V
C102	1-102-121-00	CERAMIC 0.0022MF	10% 50V	C307	1-123-381-00	ELECT 2.2MF	20% 50V
C103	1-123-324-00	ELECT 1000MF	20% 16V	C308	1-101-884-00	CERAMIC 56PF	10% 50V
C104	1-123-356-00	ELECT 10MF	20% 50V	C309	1-136-169-00	FILM 0.22MF	5% 50V
C106	1-123-381-00	ELECT 2.2MF	20% 50V	C310	1-102-038-00	CERAMIC 0.001MF	500V
C107	1-101-880-00	CERAMIC 47PF	10% 50V	C313	1-102-106-00	CERAMIC 100PF	10% 50V
C108	1-101-880-00	CERAMIC 47PF	10% 50V	C314	1-101-004-00	CERAMIC 0.01MF	50V
C109	1-101-006-21	CERAMIC 0.047MF	50V	C315	1-123-323-00	ELECT 470MF	20% 16V
C110	1-123-323-00	ELECT 470MF	20% 16V	C317	1-102-858-00	CERAMIC 10PF	0.5PF 50V
C111	1-102-983-00	CERAMIC 220PF	10% 50V	C318	1-102-858-00	CERAMIC 10PF	0.5PF 50V
C112	1-102-982-91	CERAMIC 180PF	10% 50V	C319	1-102-106-00	CERAMIC 100PF	10% 50V
C113	1-102-982-91	CERAMIC 180PF	10% 50V	C320	1-123-318-00	ELECT 33MF	20% 16V
C114	1-102-983-00	CERAMIC 220PF	10% 50V	C321	1-123-369-00	ELECT 4.7MF	20% 50V
C115	1-101-003-00	CERAMIC 0.0047MF	50V	C322	1-123-318-00	ELECT 33MF	20% 16V
C116	1-101-880-00	CERAMIC 47PF	10% 50V	C323	1-102-822-00	CERAMIC 390PF	5% 50V
C117	1-123-308-00	ELECT 220MF	20% 10V	C325	1-123-356-00	ELECT 10MF	20% 50V
C118	1-123-356-00	ELECT 10MF	20% 50V	C326	1-102-983-00	CERAMIC 220PF	10% 50V
C119	1-101-001-00	CERAMIC 0.001MF	50V	C401	1-123-322-00	ELECT 330MF	20% 16V
C120	1-101-006-21	CERAMIC 0.047MF	50V	C402	1-101-361-00	CERAMIC 150PF	5% 50V
C121	1-101-880-00	CERAMIC 47PF	10% 50V	C403	1-123-318-00	ELECT 33MF	20% 16V
C122	1-101-884-00	CERAMIC 56PF	10% 50V	C404	1-102-937-00	CERAMIC 4PF	0.25PF 50V
C123	1-102-074-00	CERAMIC 0.001MF	10% 50V	C406	1-123-332-00	ELECT 47MF	20% 16V
C124	1-123-311-00	ELECT 1000MF	20% 10V	C407	1-123-380-00	ELECT 1MF	20% 50V
C125	1-102-982-91	CERAMIC 180PF	10% 50V	C408	1-123-324-00	ELECT 1000MF	20% 16V
C126	1-102-982-91	CERAMIC 180PF	10% 50V	C409	<b>A</b> 1-161-953-51	CERAMIC 0.0047MF	20% 400V
C127	1-123-369-00	ELECT 4.7MF	20% 50V	C410	1-123-321-00	ELECT 220MF	20% 16V
				C411	1-123-380-00	ELECT 1MF	20% 50V
				C412	1-108-597-00	MYLAR 0.056MF	5% 50V
				C413	1-162-318-11	CERAMIC 0.001MF	10% 500V
				C414	1-123-356-00	ELECT 10MF	20% 50V

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C415	1-123-369-00	ELECT 4.7MF	20% 50V	C542	1-108-835-00	MYLAR 0.0068MF	10% 50V
C416	1-123-334-00	ELECT 220MF	20% 25V	C543	1-123-345-00	ELECT 100MF	20% 35V
	4-354-557-00	CAP (DIA. 10); C416		C544	1-124-117-00	ELECT 680MF	10% 25V
C418	1-123-356-00	ELECT 10MF	20% 50V	C545	1-123-332-00	ELECT 47MF	20% 16V
C419	1-123-333-00	ELECT 100MF	20% 16V	C551	1-102-212-00	CERAMIC 820PF	10% 500V
C420	1-101-821-00	CERAMIC 0.0022MF	500V	C552	1-123-335-00	ELECT 330MF	20% 25V
C421	1-102-953-00	CERAMIC 18PF	5% 50V	C553	1-102-114-00	CERAMIC 470PF	10% 50V
C422	1-123-330-00	ELECT 22MF	20% 25V	C557	1-101-810-00	CERAMIC 100PF	5% 500V
C423	1-123-333-00	ELECT 100MF	20% 25V	C601 A	1-130-682-51	FILM 0.22MF	20% 125V
C424	1-123-356-00	ELECT 10MF	20% 50V	C602	1-124-959-11	ELECT 330MF	20% 200V
C425	1-123-381-00	ELECT 2.2MF	20% 50V	C603	1-123-933-00	ELECT 10MF	20% 160V
C426	1-123-318-00	ELECT 33MF	20% 16V	C608	1-161-830-00	CERAMIC 0.0047MF	500V
C430	1-102-106-00	CERAMIC 100PF	10% 50V	C614	1-123-948-00	ELECT 22MF	20% 250V
C431	1-162-318-11	CERAMIC 0.001MF	10% 500V	C615	1-161-830-00	CERAMIC 0.0047MF	500V
C432	1-123-332-00	ELECT 47MF	20% 16V	C616	1-123-307-00	ELECT 100MF	20% 10V
C433	1-123-380-00	ELECT 1MF	20% 50V	DIODE			
C435	1-123-356-00	ELECT 10MF	20% 50V	D005	8-719-911-19	DIODE 1SS119	
C439	1-123-369-00	ELECT 4.7MF	20% 50V	D101	8-719-101-04	DIODE RD3E-B2	
C440	1-123-356-00	ELECT 10MF	20% 50V	D102	8-719-911-19	DIODE 1SS119	
C441	1-123-332-00	ELECT 47MF	20% 16V	D103	8-719-911-19	DIODE 1SS119	
C442	1-102-106-00	CERAMIC 100PF	10% 50V	D104	8-719-911-19	DIODE 1SS119	
C443	1-123-356-00	ELECT 10MF	20% 50V	D105	8-719-911-19	DIODE 1SS119	
C444	1-123-356-00	ELECT 10MF	20% 50V	D106	8-719-102-71	DIODE RD5.6E-N2	
C445	1-123-332-00	ELECT 47MF	20% 16V	D107	8-719-101-38	DIODE RD3.6E-L1	
C446	1-123-356-00	ELECT 10MF	20% 50V	D108	8-719-911-19	DIODE 1SS119	
C447	1-123-380-00	ELECT 1MF	20% 50V	D109	8-719-911-19	DIODE 1SS119	
C501	1-123-333-00	ELECT 100MF	20% 16V	D201	8-719-102-99	DIODE RD13E-N1	
C503	1-123-330-00	ELECT 22MF	20% 25V	D241	8-719-102-90	DIODE RD10E-N2	
C505	1-106-184-00	MYLAR 0.0033MF	10% 100V	D301	8-719-200-02	DIODE 10E2	
C506	1-123-332-00	ELECT 47MF	20% 16V	D302	8-719-102-71	DIODE RD5.6E-N2	
C507	1-123-356-00	ELECT 10MF	20% 50V	D303	8-719-911-19	DIODE 1SS119	
C508	1-102-112-00	CERAMIC 330PF	10% 50V	D304	8-719-911-19	DIODE 1SS119	
C509	1-102-030-00	CERAMIC 330PF	10% 500V	D402	8-719-102-99	DIODE RD13E-N1	
C510	1-124-283-00	ELECT 4.7MF	20% 16V	D405	8-719-911-19	DIODE 1SS119	
C511	1-161-267-00	CERAMIC 47PF	5% 50V	D406	8-719-924-06	DIODE ERC24-06S	
C512	1-102-125-00	CERAMIC 0.0047MF	10% 50V	D407	8-719-911-19	DIODE 1SS119	
C515	1-102-212-00	CERAMIC 820PF	10% 500V	D501	8-719-911-55	DIODE U05G	
C518	1-123-384-00	ELECT 10MF	20% 100V	D502	8-719-156-07	DIODE RD5.6E-B	
C519	1-123-024-00	ELECT 33MF	160V	D503	8-719-102-72	DIODE RD5.6E-N3	
C520 A	1-162-115-51	CERAMIC 330PF	10% 2KV	D504	8-719-911-55	DIODE U05G	
C521	1-106-198-00	MYLAR 0.012MF	10% 100V	D505	8-719-911-19	DIODE 1SS119	
C522 A	1-136-063-11	FILM 0.0055MF	3% 1.4KV	D508	8-719-901-93	DIODE V19E	
C523	1-123-932-00	ELECT 4.7MF	20% 160V	D511	8-719-924-06	DIODE ERC24-06S	
C524	1-123-356-00	ELECT 10MF	20% 50V	D512 A	8-719-901-94	DIODE V19CS	
C525	1-123-356-00	ELECT 10MF	20% 50V	D513	8-719-300-65	DIODE ES1F	
C527	1-136-173-00	FILM 0.47MF	5% 50V	D514 A	8-719-901-93	DIODE V19E	
C528	1-136-136-00	FILM 0.24MF	5% 200V	D515	8-719-901-93	DIODE V19E	
C529	1-102-223-00	CERAMIC 0.0047MF	10% 2KV	D601 A	8-719-503-06	DIODE S3WB60Z	
C530	1-123-346-00	ELECT 220MF	20% 35V	D602	8-719-924-06	DIODE ERC24-06S	
C531	1-101-821-00	CERAMIC 0.0022MF	500V	D603	8-719-924-06	DIODE ERC24-06S	
C533	1-123-933-00	ELECT 10MF	20% 160V	D604	8-719-911-55	DIODE U05G	
C540	1-102-983-00	CERAMIC 220PF	10% 50V	D605	8-719-200-02	DIODE 10E2	
C541	1-102-030-00	CERAMIC 330PF	10% 500V				

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
D606	8-719-102-68	DIODE RD5.1E-N2		Q102	8-729-178-54	TRANSISTOR 2SC2785	
D607	8-719-911-55	DIODE U05G		Q104	8-729-178-54	TRANSISTOR 2SC2785	
<u>FUSE</u>				Q105	8-729-117-54	TRANSISTOR 2SA1175	
F601	△ 1-532-509-11	FUSE, GLASS TUBE 6.3A/125V		Q106	8-729-255-12	TRANSISTOR 2SC2551	
	1-533-190-11	CLIP, FUSE; F601		Q107	8-729-178-54	TRANSISTOR 2SC2785	
F602	△ 1-532-740-11	FUSE, GLASS TUBE 1A/125V		Q109	8-729-117-54	TRANSISTOR 2SA1175	
	1-533-189-11	HOLDER, FUSE; F602		Q110	8-729-117-54	TRANSISTOR 2SA1175	
<u>IC</u>				Q170	8-729-178-54	TRANSISTOR 2SC2785	
IC051	8-759-104-05	IC UPD6325C		Q201	8-729-201-78	TRANSISTOR 2SD1406	
IC101	8-759-927-51	IC MB88505-417N		Q205	8-729-117-54	TRANSISTOR 2SA1175	
IC102	8-759-105-59	IC UPD6251C		Q206	8-729-117-54	TRANSISTOR 2SA1175	
IC103	8-759-909-50	IC CX7958		Q241	8-729-288-02	TRANSISTOR 2SD880	
IC301	8-752-019-30	IC CX20193		Q301	8-729-117-54	TRANSISTOR 2SA1175	
IC401	8-719-800-43	DIODE TLP551		Q302	8-729-178-54	TRANSISTOR 2SC2785	
IC402	8-719-800-83	DIODE TLP531-AUDIO		Q303	8-729-178-54	TRANSISTOR 2SC2785	
IC403	8-752-006-10	IC CX20061		Q401	8-729-178-54	TRANSISTOR 2SC2785	
IC404	8-752-006-10	IC CX20061		Q402	8-729-178-54	TRANSISTOR 2SC2785	
IC405	8-752-006-10	IC CX20061		Q403	8-729-178-54	TRANSISTOR 2SC2785	
IC406	8-719-800-83	DIODE TLP531-AUDIO		Q404	8-729-178-54	TRANSISTOR 2SC2785	
IC501	8-759-801-98	IC LA7830		Q405	8-729-178-54	TRANSISTOR 2SC2785	
IC601	△ 8-749-901-35	IC STR30135		Q406	8-729-178-54	TRANSISTOR 2SC2785	
<u>IF BLOCK</u>				Q407	8-729-178-54	TRANSISTOR 2SC2785	
IF201	1-464-597-11	IF BLOCK (IFA-450)		Q408	8-729-117-54	TRANSISTOR 2SA1175	
<u>COIL</u>				Q409	8-729-117-54	TRANSISTOR 2SA1175	
L051	1-408-438-31	MICRO INDUCTOR 4.7UH		Q410	8-729-178-54	TRANSISTOR 2SC2785	
L101	1-408-430-31	MICRO INDUCTOR 1UH		Q411	8-729-178-54	TRANSISTOR 2SC2785	
L102	1-408-419-00	MICRO INDUCTOR 68UH		Q413	8-729-178-54	TRANSISTOR 2SC2785	
L103	1-404-538-11	COIL		Q414	8-729-178-54	TRANSISTOR 2SC2785	
L104	1-407-717-00	MICRO INDUCTOR 1MMH		Q416	8-729-177-43	TRANSISTOR 2SD774	
L105	1-408-407-00	MICRO INDUCTOR 6.8UH		Q501	8-729-168-82	TRANSISTOR 2SC2688	
L106	1-408-407-00	MICRO INDUCTOR 6.8UH		Q502	8-729-802-50	TRANSISTOR 2SD1649-CA	
L107	1-408-438-31	MICRO INDUCTOR 4.7UH		Q503	8-729-177-43	TRANSISTOR 2SD774	
L108	1-408-432-31	MICRO INDUCTOR 1.5UH		<u>RESISTOR</u>			
L109	1-408-408-00	MICRO INDUCTOR 8.2UH		R051	1-247-849-00	CARBON 5.6K 5% 1/6W	
L201	1-408-408-00	MICRO INDUCTOR 8.2UH		R053	1-247-725-11	CARBON 10K 5% 1/4W	
L301	1-408-407-00	MICRO INDUCTOR 6.8UH		R054	1-247-725-11	CARBON 10K 5% 1/4W	
L303	1-408-407-00	MICRO INDUCTOR 6.8UH		R056	1-249-429-11	CARBON 10K 5% 1/6W	
L304	1-408-457-31	MICRO INDUCTOR 180UH		R057	1-247-831-00	CARBON 1K 5% 1/6W	
L401	1-408-408-00	MICRO INDUCTOR 8.2UH		R058	1-247-831-00	CARBON 1K 5% 1/6W	
L402	1-408-415-00	MICRO INDUCTOR 33UH		R059	1-247-713-11	CARBON 1K 5% 1/4W	
L501	1-407-365-00	COIL, CHOKE		R060	1-247-713-11	CARBON 1K 5% 1/4W	
L503	1-407-699-00	MICRO INDUCTOR 33UH		R061	1-247-831-00	CARBON 1K 5% 1/6W	
L601	△ 1-408-225-11	MICRO INDUCTOR 3.3UH		R062	1-247-831-00	CARBON 1K 5% 1/6W	
L602	△ 1-408-225-11	MICRO INDUCTOR 3.3UH		R101	1-247-713-11	CARBON 1K 5% 1/4W	
L603	1-408-438-31	MICRO INDUCTOR 4.7UH		R102	1-215-923-00	METAL OXIDE 10K 5% 3W	F
<u>TRANSISTOR</u>				R103	1-247-849-00	CARBON 5.6K 5% 1/6W	
Q101	8-729-178-54	TRANSISTOR 2SC2785		R104	1-247-831-00	CARBON 1K 5% 1/6W	
				R105	1-247-831-00	CARBON 1K 5% 1/6W	
				R106	1-249-419-11	CARBON 1.5K 5% 1/6W	
				R107	1-247-135-00	CARBON 1.5K 5% 1/4W	
				R109	1-247-851-00	CARBON 6.8K 5% 1/6W	
				R110	1-249-434-11	CARBON 27K 5% 1/6W	

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R111	1-247-256-00	CARBON	4.7K 5% 1/2W	R175	1-247-713-11	CARBON	1K 5% 1/4W
R113	1-247-717-11	CARBON	2.2K 5% 1/4W	R176	1-247-717-11	CARBON	2.2K 5% 1/4W
R114	1-247-717-11	CARBON	2.2K 5% 1/4W	R177	1-247-713-11	CARBON	1K 5% 1/4W
R115	1-247-717-11	CARBON	2.2K 5% 1/4W	R201	1-215-883-11	METAL OXIDE	33 5% 2W F
R116	1-247-717-11	CARBON	2.2K 5% 1/4W	R202	1-247-704-11	CARBON	220 5% 1/4W
R117	1-247-713-11	CARBON	1K 5% 1/4W	R203	1-249-443-11	CARBON	0.47 5% 1/4W F
R118	1-249-460-11	CARBON	15K 5% 1/4W	R204	1-216-377-11	METAL OXIDE	4.7 5% 2W F
R119	1-249-421-11	CARBON	2.2K 5% 1/6W	R205	1-214-765-00	METAL	33K 1% 1/4W
R120	1-249-421-11	CARBON	2.2K 5% 1/6W	R208	1-215-457-00	METAL	33K 1% 1/6W
R121	1-247-717-11	CARBON	2.2K 5% 1/4W	R210	1-249-433-11	CARBON	22K 5% 1/6W
R122	1-247-717-11	CARBON	2.2K 5% 1/4W	R211	1-249-433-11	CARBON	22K 5% 1/6W
R123	1-249-421-11	CARBON	2.2K 5% 1/6W	R220	1-247-713-11	CARBON	1K 5% 1/4W
R124	1-247-717-11	CARBON	2.2K 5% 1/4W	R221	1-247-831-00	CARBON	1K 5% 1/6W
R125	1-247-717-11	CARBON	2.2K 5% 1/4W	R222	1-247-706-11	CARBON	330 5% 1/4W
R126	1-249-421-11	CARBON	2.2K 5% 1/6W	R223	1-249-440-11	CARBON	82K 5% 1/6W
R127	1-247-717-11	CARBON	2.2K 5% 1/4W	R224	1-247-891-00	CARBON	330K 5% 1/6W
R128	1-249-421-11	CARBON	2.2K 5% 1/6W	R226	1-249-429-11	CARBON	10K 5% 1/6W
R129	1-249-421-11	CARBON	2.2K 5% 1/6W	R227	1-249-421-11	CARBON	2.2K 5% 1/6W
R131	1-246-507-00	CARBON	27K 5% 1/4W	R228	1-249-405-11	CARBON	100 5% 1/6W
R132	1-247-125-00	CARBON	560 5% 1/4W	R241	1-216-422-11	METAL OXIDE	18 5% 1W F
R133	1-247-125-00	CARBON	560 5% 1/4W	R242	1-246-463-00	CARBON	390 5% 1/4W
R134	1-247-135-00	CARBON	1.5K 5% 1/4W	R251	1-247-700-11	CARBON	100 5% 1/4W
R135	1-247-706-11	CARBON	330 5% 1/4W	R301	1-214-769-00	METAL	47K 1% 1/4W
R137	1-247-135-00	CARBON	1.5K 5% 1/4W	R303	1-247-829-00	CARBON	820 5% 1/6W
R138	1-247-831-00	CARBON	1K 5% 1/6W	R304	1-247-819-00	CARBON	330 5% 1/6W
R139	1-249-421-11	CARBON	2.2K 5% 1/6W	R305	1-247-819-00	CARBON	330 5% 1/6W
R140	1-247-717-11	CARBON	2.2K 5% 1/4W	R306	1-247-819-00	CARBON	330 5% 1/6W
R141	1-247-167-00	CARBON	33K 5% 1/4W	R307	1-247-875-00	CARBON	68K 5% 1/6W
R142	1-247-831-00	CARBON	1K 5% 1/6W	R308	1-246-507-00	CARBON	27K 5% 1/4W
R143	1-249-421-11	CARBON	2.2K 5% 1/6W	R310	1-247-171-00	CARBON	47K 5% 1/4W
R144	1-249-421-11	CARBON	2.2K 5% 1/6W	R311	1-247-831-00	CARBON	1K 5% 1/6W
R150	1-247-725-11	CARBON	10K 5% 1/4W	R312	1-247-725-11	CARBON	10K 5% 1/4W
R151	1-244-921-00	CARBON	100K 5% 1/2W	R313	1-247-821-00	CARBON	390 5% 1/6W
R153	1-249-429-11	CARBON	10K 5% 1/6W	R314	1-247-873-00	CARBON	56K 5% 1/6W
R154	1-249-429-11	CARBON	10K 5% 1/6W	R315	1-247-859-00	CARBON	15K 5% 1/6W
R155	1-249-429-11	CARBON	10K 5% 1/6W	R316	1-247-867-00	CARBON	33K 5% 1/6W
R156	1-249-421-11	CARBON	2.2K 5% 1/6W	R317	1-249-432-11	CARBON	18K 5% 1/6W
R157	1-249-421-11	CARBON	2.2K 5% 1/6W	R318	1-249-421-11	CARBON	2.2K 5% 1/6W
R158	1-249-421-11	CARBON	2.2K 5% 1/6W	R319	1-247-831-00	CARBON	1K 5% 1/6W
R159	1-247-717-11	CARBON	2.2K 5% 1/4W	R320	1-247-713-11	CARBON	1K 5% 1/4W
R160	1-247-125-00	CARBON	560 5% 1/4W	R321	1-247-815-00	CARBON	220 5% 1/6W
R161	1-249-441-11	CARBON	100K 5% 1/6W	R322	1-247-837-00	CARBON	1.8K 5% 1/6W
R162	1-249-433-11	CARBON	22K 5% 1/6W	R324	1-249-425-11	CARBON	4.7K 5% 1/6W
R163	1-249-429-11	CARBON	10K 5% 1/6W	R325	1-247-849-00	CARBON	5.6K 5% 1/6W
R164	1-249-433-11	CARBON	22K 5% 1/6W	R327	1-249-441-11	CARBON	100K 5% 1/6W
R165	1-247-171-00	CARBON	47K 5% 1/4W	R328	1-247-713-11	CARBON	1K 5% 1/4W
R166	1-247-171-00	CARBON	47K 5% 1/4W	R401	1-247-805-00	CARBON	82 5% 1/6W
R167	1-247-163-00	CARBON	22K 5% 1/4W	R402	1-247-851-00	CARBON	6.8K 5% 1/6W
R170	1-247-713-11	CARBON	1K 5% 1/4W	R403	1-247-833-00	CARBON	1.2K 5% 1/6W
R171	1-247-151-00	CARBON	6.8K 5% 1/4W	R404	1-249-405-11	CARBON	100 5% 1/6W
R172	1-249-460-11	CARBON	15K 5% 1/4W	R405	1-247-859-00	CARBON	15K 5% 1/6W
R173	1-247-713-11	CARBON	1K 5% 1/4W	R406	1-249-405-11	CARBON	100 5% 1/6W F
R174	1-247-717-11	CARBON	2.2K 5% 1/4W	R407	1-249-429-11	CARBON	10K 5% 1/6W

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R408	1-247-845-00	CARBON	3.9K 5% 1/6W	R505	1-249-459-11	CARBON	12K 5% 1/4W F
R409	1-249-405-11	CARBON	100 5% 1/6W	R506	1-247-719-11	CARBON	3.3K 5% 1/4W
R410	1-247-823-00	CARBON	470 5% 1/6W	R507	1-247-843-00	CARBON	3.3K 5% 1/6W
R411	1-247-843-00	CARBON	3.3K 5% 1/6W	R508	1-247-706-11	CARBON	330 5% 1/4W
R412	1-249-399-11	CARBON	33 5% 1/6W F	R510	1-247-151-00	CARBON	6.8K 5% 1/4W
R413	1-249-419-11	CARBON	1.5K 5% 1/6W	R511	1-247-843-00	CARBON	3.3K 5% 1/6W
R414	1-247-859-00	CARBON	15K 5% 1/6W	R512	1-247-831-00	CARBON	1K 5% 1/6W
R416	1-247-837-00	CARBON	1.8K 5% 1/6W	R513	1-249-460-11	CARBON	15K 5% 1/4W
R417	1-247-831-00	CARBON	1K 5% 1/6W	R515	1-249-460-11	CARBON	15K 5% 1/4W
R418	1-249-405-11	CARBON	100 5% 1/6W	R516	1-216-434-11	METAL OXIDE	1.8K 5% 1W F
R419	1-247-837-00	CARBON	1.8K 5% 1/6W	R517	1-215-892-11	METAL OXIDE	1K 5% 2W F
R420	1-215-869-11	METAL OXIDE	1K 5% 1W F	R518	△ 1-216-434-51	METAL OXIDE	1.8K 5% 1W F
R421	1-249-421-11	CARBON	2.2K 5% 1/6W	R519	1-247-706-11	CARBON	330 5% 1/4W
R422	1-249-441-11	CARBON	100K 5% 1/6W	R520	△ 1-249-447-51	CARBON	1 5% 1/4W F
R423	1-247-101-00	CARBON	56 5% 1/4W F	R521	△ 1-249-383-51	CARBON	1.5 5% 1/6W F
R424	1-247-831-00	CARBON	1K 5% 1/6W	R522	1-215-854-51	METAL	15K 1% 1/4W
R425	1-247-831-00	CARBON	1K 5% 1/6W	R523	1-214-747-00	METAL	5.6K 1% 1/4W
R426	1-247-857-00	CARBON	12K 5% 1/6W	✕ R524	△	CARBON	1/4W
R427	1-247-827-00	CARBON	680 5% 1/6W	R525	1-216-460-11	METAL OXIDE	3.9K 5% 2W F
R428	1-202-730-00	SOLID	8.2M 10% 1/2W	R526	1-246-525-00	CARBON	150K 5% 1/4W
R429	1-247-843-00	CARBON	3.3K 5% 1/6W	R527	1-214-915-00	METAL	120K 1% 1/2W
R430	1-249-429-11	CARBON	10K 5% 1/6W	R528	1-247-149-00	CARBON	5.6K 5% 1/4W
R431	1-247-831-00	CARBON	1K 5% 1/6W	R529	1-249-423-11	CARBON	3.3K 5% 1/6W F
R432	1-247-859-00	CARBON	15K 5% 1/6W	R530	1-247-823-00	CARBON	470 5% 1/6W
R433	1-247-831-00	CARBON	1K 5% 1/6W	R531	1-244-929-00	CARBON	220K 5% 1/2W
R434	1-249-421-11	CARBON	2.2K 5% 1/6W	R533	△ 1-249-383-51	CARBON	1.5 5% 1/6W F
R435	1-247-713-11	CARBON	1K 5% 1/4W	R534	1-244-919-00	CARBON	82K 5% 1/2W
R436	1-247-119-00	CARBON	330 5% 1/4W F	R535	1-247-713-11	CARBON	1K 5% 1/4W
R438	1-249-441-11	CARBON	100K 5% 1/6W	R537	1-216-426-11	METAL OXIDE	82 5% 1W F
R440	1-249-429-11	CARBON	10K 5% 1/6W	R538	1-247-125-00	CARBON	560 5% 1/4W
R441	1-249-429-11	CARBON	10K 5% 1/6W	R539	1-249-425-11	CARBON	4.7K 5% 1/6W
R442	1-247-713-11	CARBON	1K 5% 1/4W	R541	1-247-805-00	CARBON	82 5% 1/6W
R443	1-247-713-11	CARBON	1K 5% 1/4W	R542	1-247-817-00	CARBON	270 5% 1/6W
R444	1-247-831-00	CARBON	1K 5% 1/6W	R543	1-216-350-11	METAL OXIDE	1.2 5% 1W F
R445	1-249-429-11	CARBON	10K 5% 1/6W	R544	1-247-133-00	CARBON	1.2K 5% 1/4W
R446	1-249-429-11	CARBON	10K 5% 1/6W	R545	1-247-845-00	CARBON	3.9K 5% 1/6W
R447	1-249-405-11	CARBON	100 5% 1/6W	R552	1-216-373-11	METAL OXIDE	2.2 5% 2W F
R448	1-247-831-00	CARBON	1K 5% 1/6W	R601	△ 1-202-719-91	SOLID	1M 10% 1/2W
R449	△ 1-202-727-91	SOLID	4.7M 10% 1/2W	R602	△ 1-205-707-12	CEMENTED	2.2 10W
R450	1-249-414-11	CARBON	560 5% 1/6W	R603	△ 1-216-373-51	METAL OXIDE	2.2 5% 2W F
R451	1-247-837-00	CARBON	1.8K 5% 1/6W	R604	1-215-899-11	METAL OXIDE	15K 5% 2W F
R452	1-247-849-00	CARBON	5.6K 5% 1/6W	R605	1-247-895-00	CARBON	470K 5% 1/6W
R453	1-247-857-00	CARBON	12K 5% 1/6W	R606	△ 1-205-700-11	CEMENTED	200 5% 20W
R454	1-247-831-00	CARBON	1K 5% 1/6W	R607	△ 1-247-696-51	CARBON	47 5% 1/4W F
R455	1-247-119-00	CARBON	330 5% 1/4W F	R610	1-215-897-11	METAL OXIDE	6.8K 5% 2W F
R456	1-249-441-11	CARBON	100K 5% 1/6W	R612	1-216-431-11	METAL OXIDE	560 5% 1W F
R457	1-249-419-11	CARBON	1.5K 5% 1/6W	R613	1-207-474-00	WIREWOUND	8.2 10% 1/2W
R458	1-247-859-00	CARBON	15K 5% 1/6W	R614	1-205-744-11	CEMENTED	4.7K 5% 20W
R459	1-247-831-00	CARBON	1K 5% 1/6W	R615	1-215-895-11	METAL OXIDE	3.3K 5% 2W F
R460	1-247-725-11	CARBON	10K 5% 1/4W				
R501	1-214-788-00	METAL	300K 1% 1/4W				
R502	1-216-460-11	METAL OXIDE	3.9K 5% 2W F				
R503	1-216-460-11	METAL OXIDE	3.9K 5% 2W F				

## VARIABLE RESISTOR

RV301	1-237-210-11	RES, VAR, CARBON (WITH SW)	20KX3
RV302	1-237-210-11	RES, VAR, CARBON (WITH SW)	20KX3

- The components identified by ✕ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Select the resistance value according to SAFETY RELATED ADJUSTMENT.

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

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C

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
RV303	1-237-210-11	RES, VAR, CARBON (WITH SW) 20KX3		*1-617-796-11	M BOARD		
RV304	1-230-631-11	RES, ADJ, CARBON 22K			*****		
RV401	1-230-628-11	RES, ADJ, CARBON 2.2K		*4-370-578-01	HOLDER, LED		
RV402	1-230-271-00	RES, ADJ, CARBON 4.7K			DIODE		
RV403	1-230-271-00	RES, ADJ, CARBON 4.7K		D001	8-719-311-23	DIODE SEL112NP-N	
RV501	1-228-728-00	RES, ADJ, CERAMIC CARBON 100K		D002	8-719-311-23	DIODE SEL112NP-N	
RV502	1-230-633-41	RES, ADJ, CARBON 47K		D003	8-719-114-34	DIODE SY432D	
RV503	1-230-629-41	RES, ADJ, CARBON 3.3K		D004	8-719-311-23	DIODE SEL112NP-N	
RV504	1-230-630-11	RES, ADJ, CARBON 10K			IC		
S018	1-237-210-11	RES, VAR, CARBON (WITH SW) 20KX3		IC001	8-741-131-70	IC BX1317	
	RELAY				CONNECTOR		
RY601A	1-515-346-13	RELAY		M1	*1-564-456-41	PLUG, CONNECTOR (2.5MM) 8P	
	SWITCH				*****		
S001 A	1-554-303-11	SWITCH, KEY BOARD		*A-1330-601-A	C BOARD, COMPLETE		
S002	1-554-303-21	SWITCH, KEY BOARD			*****		
S003	1-554-303-21	SWITCH, KEY BOARD		1-526-819-11	SOCKET, CRT		
S004	1-554-303-21	SWITCH, KEY BOARD			CONNECTOR		
S005	1-554-303-21	SWITCH, KEY BOARD		C1	*1-506-371-00	2P PLUG (L)	
S006	1-554-824-11	SWITCH, PUSH (1 KEY)		C2	*1-508-786-00	2P PLUG (M)	
S010	1-554-303-21	SWITCH, KEY BOARD		C3	*1-564-442-11	PLUG, CONNECTOR (2.5MM) 6P	
S011	1-554-303-21	SWITCH, KEY BOARD		C4	*1-508-765-00	3P PLUG (M)	
S012	1-554-303-21	SWITCH, KEY BOARD			CAPACITOR		
S013	1-554-303-21	SWITCH, KEY BOARD		C705	1-162-116-00	CERAMIC 680PF 10% 2KV	
S014	1-554-303-21	SWITCH, KEY BOARD		C706	1-129-714-00	FILM 0.01MF 10% 630V	
S015	1-554-303-21	SWITCH, KEY BOARD			COIL		
S016	1-554-303-21	SWITCH, KEY BOARD		L701	1-408-420-00	MICRO INDUCTOR 82UH	
S017	1-554-824-11	SWITCH, PUSH (1 KEY)		L702	1-408-420-00	MICRO INDUCTOR 82UH	
S501	1-554-186-00	SWITCH, LEVER		L703	1-408-420-00	MICRO INDUCTOR 82UH	
	TRANSFORMER			L704	1-408-424-00	MICRO INDUCTOR 180UH	
T301	1-404-488-00	COIL, IF			TRANSISTOR		
T401	1-421-749-11	TRANSFORMER, INSULATING		Q701	8-729-326-11	TRANSISTOR 2SC2611	
T501	1-437-090-00	HDT		Q702	8-729-326-11	TRANSISTOR 2SC2611	
T503 A	1-439-314-22	TRANSFORMER ASSY, FLYBACK		Q703	8-729-326-11	TRANSISTOR 2SC2611	
T601 A	1-421-357-31	TRANSFORMER, LINE FILTER			RESISTOR		
	THERMISTOR			R701	1-249-421-11	CARBON 2.2K 5% 1/6W	
TH301	1-800-945-00	THERMISTOR S-10K		R703	1-247-821-00	CARBON 390 5% 1/6W	
THP601A	1-800-686-51	THERMISTOR (POSITIVE)		R704	1-247-841-00	CARBON 2.7K 5% 1/6W	
	TUNER			R705	1-202-824-00	SOLID 3.3K 1/2W	
TU101A	1-463-603-11	TUNER, ET (BTP-201)		R706	1-215-899-11	METAL OXIDE 15K 5% 2W F	
	CRYSTAL			R707	1-247-833-00	CARBON 1.2K 5% 1/6W	
X301	1-527-396-00	CRYSTAL, OSC		R708	1-247-823-00	CARBON 470 5% 1/6W	
				R709	1-247-827-00	CARBON 680 5% 1/6W	

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

C

X

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R710	1-247-841-00	CARBON 2.7K 5% 1/6W		C823	1-123-356-00	ELECT 10MF 20% 50V	
R711	1-202-824-00	SOLID 3.3K 1/2W		C824	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
R712	1-215-899-11	METAL OXIDE 15K 5% 2W	F	C825	1-123-356-00	ELECT 10MF 20% 50V	
R713	1-247-833-00	CARBON 1.2K 5% 1/6W		C826	1-123-323-00	ELECT 470MF 20% 16V	
R714	1-247-823-00	CARBON 470 5% 1/6W		C827	1-123-356-00	ELECT 10MF 20% 50V	
R715	1-247-827-00	CARBON 680 5% 1/6W		C828	1-108-622-91	MYLAR 0.0047MF 10% 100V	
R716	1-247-841-00	CARBON 2.7K 5% 1/6W		C829	1-123-356-00	ELECT 10MF 20% 50V	
R717	1-202-824-00	SOLID 3.3K 1/2W		C830	1-123-356-00	ELECT 10MF 20% 50V	
R718	1-215-899-11	METAL OXIDE 15K 5% 2W	F	C831	1-124-645-11	ELECT 10MF 20% 16V	
R719	1-202-842-51	SOLID 220K 1/2W		C832	1-106-180-00	MYLAR 0.0022MF 5% 50V	
R720	1-202-719-00	SOLID 1M 10% 1/2W		C833	1-123-356-00	ELECT 10MF 20% 50V	
R721	1-216-348-00	METAL OXIDE 0.82 5% 1W	F	C834	1-123-321-00	ELECT 220MF 20% 16V	
R722	1-202-848-00	SOLID 680K 1/2W		C835	1-123-381-00	ELECT 2.2MF 20% 50V	
R723	1-202-838-00	SOLID 100K 1/2W		C837	1-123-381-00	ELECT 2.2MF 20% 50V	
VARIABLE RESISTOR				C838	1-123-318-00	ELECT 33MF 20% 16V	
RV701	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		C839	1-123-324-00	ELECT 1000MF 20% 16V	
RV702	1-228-722-00	RES, ADJ, CERAMIC CARBON 3.3K		C841	1-102-244-00	CERAMIC 220PF 10% 500V	
RV703	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		C843	1-123-381-00	ELECT 2.2MF 20% 100V	
RV704	1-228-722-00	RES, ADJ, CERAMIC CARBON 3.3K		C844	1-123-933-00	ELECT 10MF 20% 160V	
RV705	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		C845	1-123-381-00	ELECT 2.2MF 20% 100V	
RV706	1-230-641-11	RES, ADJ, METAL GLAZE 2.2M		C846	1-102-244-00	CERAMIC 220PF 10% 500V	
RV707	1-230-641-11	RES, ADJ, METAL GLAZE 2.2M		C848	1-108-622-91	MYLAR 0.0047MF 10% 100V	
RV708	1-230-798-11	RES, ADJ, METAL GLAZE 90M		C849	1-123-933-00	ELECT 10MF 20% 160V	
RV709	1-230-409-11	RES, ADJ, CARBON 22K		C850	1-108-622-91	MYLAR 0.0047MF 10% 100V	
*****				C851	1-123-369-00	ELECT 4.7MF 20% 25V	
*A-1386-027-A X BOARD, COMPLETE				C852	1-123-332-00	ELECT 47MF 20% 16V	
*****				C853	1-123-330-00	ELECT 22MF 20% 25V	
CAPACITOR				C854	1-123-356-00	ELECT 10MF 20% 50V	
C801	1-131-368-00	TANTALUM 3.3MF 10% 16V		C855	1-123-330-00	ELECT 22MF 20% 25V	
C802	1-123-382-00	ELECT 3.3MF 20% 50V		C856	1-123-356-00	ELECT 10MF 20% 50V	
C803	1-131-371-00	TANTALUM 10MF 10% 16V		C857	1-123-332-00	ELECT 47MF 20% 16V	
C804	1-123-381-00	ELECT 2.2MF 20% 50V		C858	1-123-369-00	ELECT 4.7MF 20% 25V	
C805	1-123-330-00	ELECT 22MF 20% 25V		C860	1-123-357-00	ELECT 22MF 20% 50V	
C806	1-123-380-00	ELECT 1MF 20% 50V		C861	1-123-357-00	ELECT 22MF 20% 50V	
C807	1-123-356-00	ELECT 10MF 20% 50V		C862	1-123-318-00	ELECT 33MF 20% 16V	
C808	1-108-603-00	MYLAR 0.1MF 5% 50V		C870	1-123-369-00	ELECT 4.7MF 20% 25V	
C809	1-108-587-00	MYLAR 0.022MF 5% 50V		C875	1-123-369-00	ELECT 4.7MF 20% 25V	
C810	1-123-369-00	ELECT 4.7MF 20% 50V		C899	1-123-323-00	ELECT 470MF 20% 16V	
C811	1-108-630-91	MYLAR 0.022MF 10% 100V		DIODE			
C812	1-106-196-00	MYLAR 0.01MF 10% 100V		D801	8-719-911-19	DIODE 1SS119	
C813	1-123-356-00	ELECT 10MF 20% 50V		D802	8-719-911-19	DIODE 1SS119	
C814	1-123-356-00	ELECT 10MF 20% 50V		D831	8-719-102-90	DIODE RD10E-N2	
C815	1-123-369-00	ELECT 4.7MF 20% 50V		IC			
C816	1-123-356-00	ELECT 10MF 20% 50V		IC801	8-752-011-20	IC CX20112	
C817	1-123-356-00	ELECT 10MF 20% 50V		IC802	8-752-030-26	IC CXA1011P	
C818	1-123-369-00	ELECT 4.7MF 20% 50V		IC803	8-759-900-70	IC MB3110	
C819	1-130-309-00	FILM 0.033MF 5% 100V		IC804	8-719-800-83	DIODE TLP531-AUDIO	
C820	1-123-356-00	ELECT 10MF 20% 50V		IC805	8-719-800-83	DIODE TLP531-AUDIO	
C821	1-130-279-00	FILM 0.0018MF 5% 100V		COIL			
C822	1-123-380-00	ELECT 1MF 20% 50V		L801	1-408-242-00	MICRO INDUCTOR 10MMH	

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

X

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>TRANSISTOR</u>				R835	1-249-429-11	CARBON	10K 5% 1/6W
Q801	8-729-178-54	TRANSISTOR 2SC2785		R836	1-249-429-11	CARBON	10K 5% 1/6W
Q802	8-729-309-08	TRANSISTOR 2SC1890A		R837	1-247-831-00	CARBON	1K 5% 1/6W
Q803	8-729-336-11	TRANSISTOR 2SB861-02		R838	1-247-831-00	CARBON	1K 5% 1/6W
	*4-378-234-01	HEAT SINK, CLIP; Q803		R839	1-249-405-11	CARBON	100 5% 1/6W F
Q804	8-729-117-54	TRANSISTOR 2SA1175		R840	1-247-883-00	CARBON	150K 5% 1/6W
Q805	8-729-178-54	TRANSISTOR 2SC2785		R841	1-247-099-00	CARBON	47 5% 1/4W F
Q806	8-729-323-82	TRANSISTOR 2SD1138-02-C		R842	1-247-831-00	CARBON	1K 5% 1/6W
	*4-378-234-01	HEAT SINK, CLIP; Q806		R843	1-247-831-00	CARBON	1K 5% 1/6W
Q807	8-729-323-82	TRANSISTOR 2SD1138-02-C		R844	1-247-851-00	CARBON	6.8K 5% 1/6W
	*4-378-234-01	HEAT SINK, CLIP; Q807		R845	1-247-827-00	CARBON	680 5% 1/6W
Q808	8-729-309-08	TRANSISTOR 2SC1890A		R846	1-247-733-11	CARBON	33 5% 1/2W F
Q809	8-729-336-11	TRANSISTOR 2SB861-02		R847	1-247-841-00	CARBON	2.7K 5% 1/6W
	*4-378-234-01	HEAT SINK, CLIP; Q809		R848	1-247-733-11	CARBON	33 5% 1/2W F
Q810	8-729-288-02	TRANSISTOR 2SD880		R849	1-247-099-00	CARBON	47 5% 1/4W F
Q811	8-729-178-54	TRANSISTOR 2SC2785		R850	1-247-851-00	CARBON	6.8K 5% 1/6W
Q812	8-729-178-54	TRANSISTOR 2SC2785		R851	1-247-883-00	CARBON	150K 5% 1/6W
Q813	8-729-178-54	TRANSISTOR 2SC2785		R852	1-247-827-00	CARBON	680 5% 1/6W
Q814	8-729-178-54	TRANSISTOR 2SC2785		R853	1-247-733-11	CARBON	33 5% 1/2W F
Q815	8-729-178-54	TRANSISTOR 2SC2785		R854	1-247-841-00	CARBON	2.7K 5% 1/6W
Q816	8-729-178-54	TRANSISTOR 2SC2785		R855	1-246-507-00	CARBON	27K 5% 1/4W
<u>RESISTOR</u>				R856	1-249-434-11	CARBON	27K 5% 1/6W
R802	1-215-487-00	METAL 560K 1% 1/6W		R857	1-247-733-11	CARBON	33 5% 1/2W F
R803	1-215-449-00	METAL 15K 1% 1/6W		R858	1-249-414-11	CARBON	560 5% 1/6W
R804	1-249-421-11	CARBON 2.2K 5% 1/6W		R859	1-247-883-00	CARBON	150K 5% 1/6W
R805	1-249-429-11	CARBON 10K 5% 1/6W		R860	1-249-433-11	CARBON	22K 5% 1/6W
R806	1-247-819-00	CARBON 330 5% 1/6W		R861	1-247-843-00	CARBON	3.3K 5% 1/6W
R807	1-247-819-00	CARBON 330 5% 1/6W		R862	1-247-843-00	CARBON	3.3K 5% 1/6W
R808	1-247-849-00	CARBON 5.6K 5% 1/6W		R863	1-249-419-11	CARBON	1.5K 5% 1/6W
R809	1-249-435-11	CARBON 33K 5% 1/6W		R864	1-247-807-00	CARBON	100 5% 1/6W
R811	1-247-713-11	CARBON 1K 5% 1/4W		R865	1-247-857-00	CARBON	12K 5% 1/6W
R813	1-247-713-11	CARBON 1K 5% 1/4W		R866	1-247-833-00	CARBON	1.2K 5% 1/6W
R814	1-247-713-11	CARBON 1K 5% 1/4W		R867	1-249-435-11	CARBON	33K 5% 1/6W
R815	1-247-831-00	CARBON 1K 5% 1/6W		R868	1-247-851-00	CARBON	6.8K 5% 1/6W
R816	1-249-441-11	CARBON 100K 5% 1/6W		R869	1-249-408-11	CARBON	180 5% 1/6W F
R817	1-215-470-00	METAL 110K 1% 1/6W		R870	1-247-811-00	CARBON	150 5% 1/6W
R818	1-215-470-00	METAL 110K 1% 1/6W		R871	1-249-414-11	CARBON	560 5% 1/6W
R819	1-247-706-11	CARBON 330 5% 1/4W		R872	1-247-811-00	CARBON	150 5% 1/6W
R820	1-247-704-11	CARBON 220 5% 1/4W		R873	1-247-137-00	CARBON	1.8K 5% 1/4W
R821	1-247-704-11	CARBON 220 5% 1/4W		R874	1-247-837-00	CARBON	1.8K 5% 1/6W
R822	1-249-414-11	CARBON 560 5% 1/6W		R875	1-247-173-00	CARBON	56K 5% 1/4W
R823	1-215-430-00	METAL 2.4K 1% 1/6W		R876	1-247-831-00	CARBON	1K 5% 1/6W
R824	1-247-853-00	CARBON 8.2K 5% 1/6W		R877	1-249-433-11	CARBON	22K 5% 1/6W
R825	1-247-833-00	CARBON 1.2K 5% 1/6W		R878	1-247-843-00	CARBON	3.3K 5% 1/6W
R826	1-249-429-11	CARBON 10K 5% 1/6W		R879	1-247-843-00	CARBON	3.3K 5% 1/6W
R827	1-249-421-11	CARBON 2.2K 5% 1/6W		R880	1-249-419-11	CARBON	1.5K 5% 1/6W
R828	1-247-721-11	CARBON 4.7K 5% 1/4W		R881	1-249-405-11	CARBON	100 5% 1/6W
R829	1-249-425-11	CARBON 4.7K 5% 1/6W		R882	1-247-857-00	CARBON	12K 5% 1/6W
R830	1-246-545-00	CARBON 1M 5% 1/4W		R883	1-247-833-00	CARBON	1.2K 5% 1/6W
R831	1-247-843-00	CARBON 3.3K 5% 1/6W		R884	1-247-167-00	CARBON	33K 5% 1/4W
R833	1-215-886-11	METAL OXIDE 100 5% 1/6W F		R885	1-247-851-00	CARBON	6.8K 5% 1/6W
R834	1-247-815-00	CARBON 220 5% 1/6W		R886	1-249-408-11	CARBON	180 5% 1/6W F




**X      Z      U**

## SECTION 7

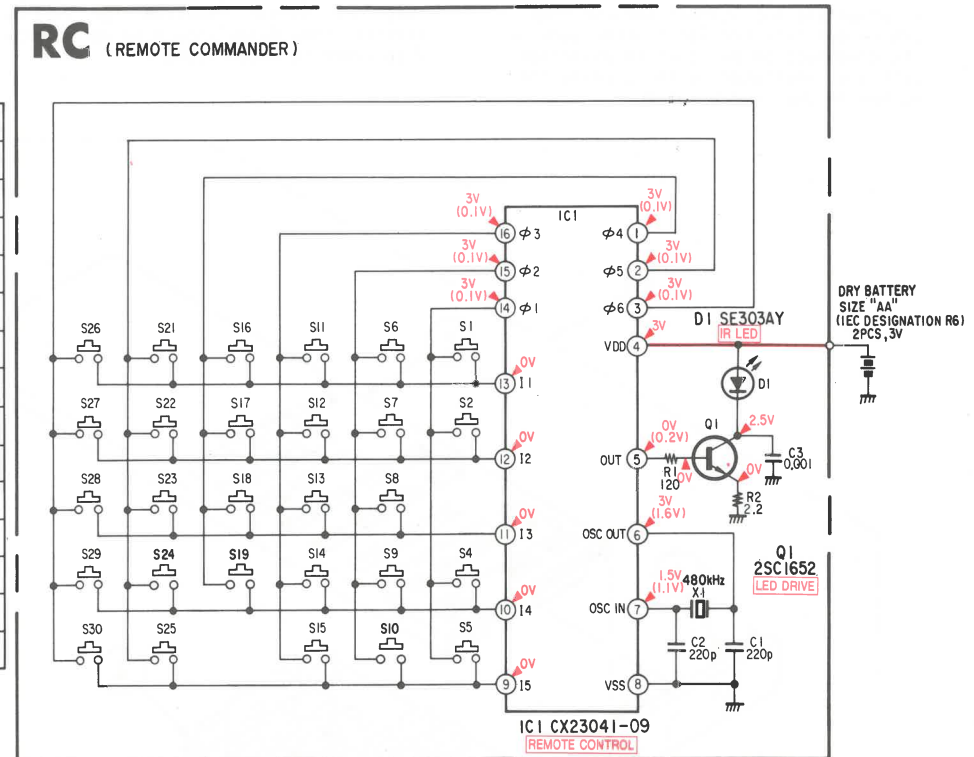
### REMOTE COMMANDER (RM-731)

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>VARIABLE RESISTOR</u>							
RV801	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		A.1-536-988-11	TERMINAL BOARD ASSY, ANTENNA		
RV802	1-228-724-00	RES, ADJ, CERAMIC CARBON 10K		A.1-551-603-11	CORD, POWER		
RV804	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		*1-564-458-11	PLUG, CONNECTOR (2.5MM) 10P		
RV805	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		L901 A.1-426-146-31	COIL, DEMAGNETIZATION		
RV806	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		V901 A.8-735-553-05	CRT (A34JBU10X)		
				*****			
RV807	1-228-723-00	RES, ADJ, CERAMIC CARBON 4.7K		ACCESSORIES AND PACKING MATERIALS			
RV808	1-228-724-00	RES, ADJ, CERAMIC CARBON 10K		*****			
RV811	1-228-728-00	RES, ADJ, CERAMIC CARBON 100K		<u>Part No.</u>	<u>Description</u>		<u>Remark</u>
RV812	1-228-726-00	RES, ADJ, CERAMIC CARBON 33K		A-1470-710-A	COMMANDER ASSY (RM-731)		
RV814	1-228-724-00	RES, ADJ, CERAMIC CARBON 10K		1-501-335-11	ANTENNA, TELESCOPIC (AN-18)		
RV815	1-228-724-00	RES, ADJ, CERAMIC CARBON 10K		1-562-443-11	CONNECTOR, ANTENNA		
RV816	1-228-724-00	RES, ADJ, CERAMIC CARBON 10K		* 4-378-262-01	BAG, PROTECTION		
RV817	1-228-731-00	RES, ADJ, CERAMIC CARBON 470K		4-379-927-01	INDIVIDUAL CARTON		
<u>TRANSFORMER</u>				4-379-928-01	CUSHION (UPPER) (ASSY)		
T801	1-427-529-00	TRANSFORMER, OUTPUT		4-379-929-01	CUSHION (LOWER) (ASSY)		
T802	1-427-529-00	TRANSFORMER, OUTPUT		4-482-203-21	MANUAL, INSTRUCTION		
<u>CONNECTOR</u>				4-491-213-22	INSTRUCTION		
X1	*1-564-442-11	PLUG, CONNECTOR (2.5MM) 6P					
X2	*1-508-766-00	4P PLUG (M)					
X3	*1-564-444-11	PLUG, CONNECTOR (2.5MM) 8P					
X4	*1-508-765-00	3P PLUG (M)					
X5	*1-564-353-00	PLUG, CONNECTOR (2.5MM) 2P					
X6	*1-564-440-11	PLUG, CONNECTOR (2.5MM) 4P					
*****							
	*1-617-797-11	Z BOARD					
		*****					
<u>JACK</u>							
J901	1-563-262-11	JACK, EARPHONE STEREO					
<u>RESISTOR</u>							
R901	1-202-551-00	SOLID	120 5% 1/2W				
R902	1-202-551-00	SOLID	120 5% 1/2W				
*****							
	*1-618-661-21	U BOARD					
		*****					
*****							
MISCELLANEOUS							
*****							
L904	A.1-451-234-12	DEFLECTION YOKE (SY-125A)					
	1-452-032-00	MAGNET, DISK; 10MM Ø					
	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø					
	1-452-277-00	MAGNET, BMC					
SP901	1-503-605-11	SPEAKER					
SP902	1-503-605-11	SPEAKER					

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

### 7-1. SCHEMATIC DIAGRAM

S1	CH+	S16	4
S2	CH-	S17	5
		S18	6
S4	TV / VIDEO	S19	PIC -
S5	MTS		
S6	0	S21	1
S7	JUMP	S22	2
S8	ENTER	S23	3
S9	VOL-	S24	PIC +
S10	CLEAR	S25	TIMER OFF / REPEAT
S11	7	S26	MUTING
S12	8	S27	SLEEP
S13	9	S28	POWER
S14	VOL +	S29	DISPLAY
S15	AM / PM	S30	TIMER / BLOCK



**Note:**

- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 M $\Omega$ /V digital multimeter. No marking: S1 is depressed.  
(     ): no depressed.
- Voltage variations may be noted due to normal production tolerances.

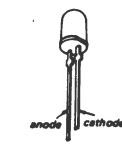
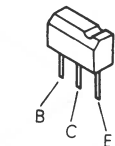
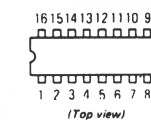
## ● SEMICONDUCTORS

**CX23041-09**

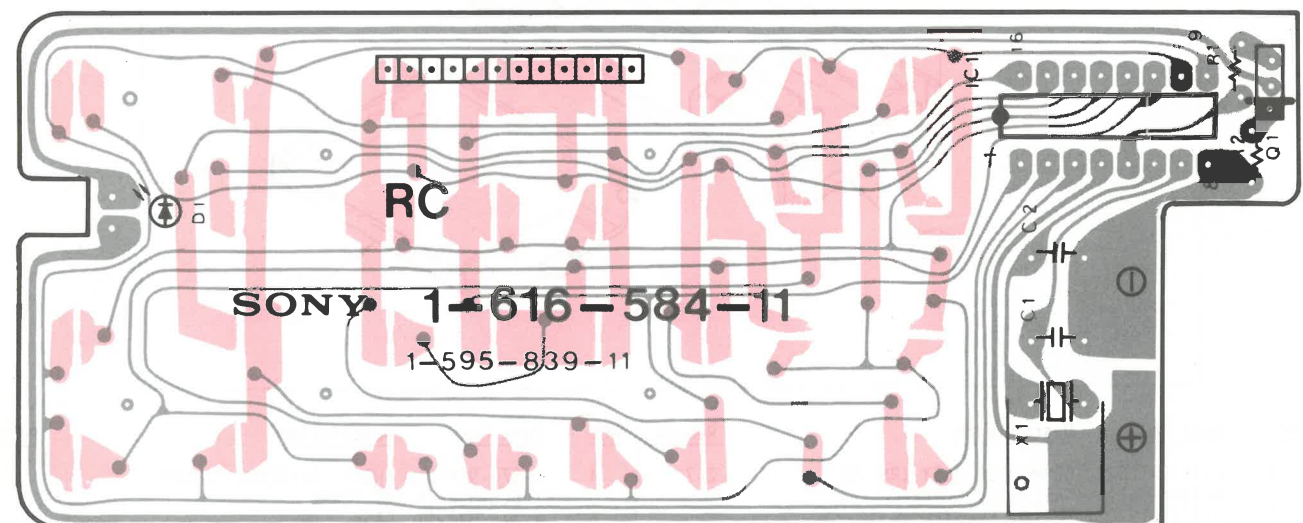
**2SC1652**

SE303AY

SLR-932A



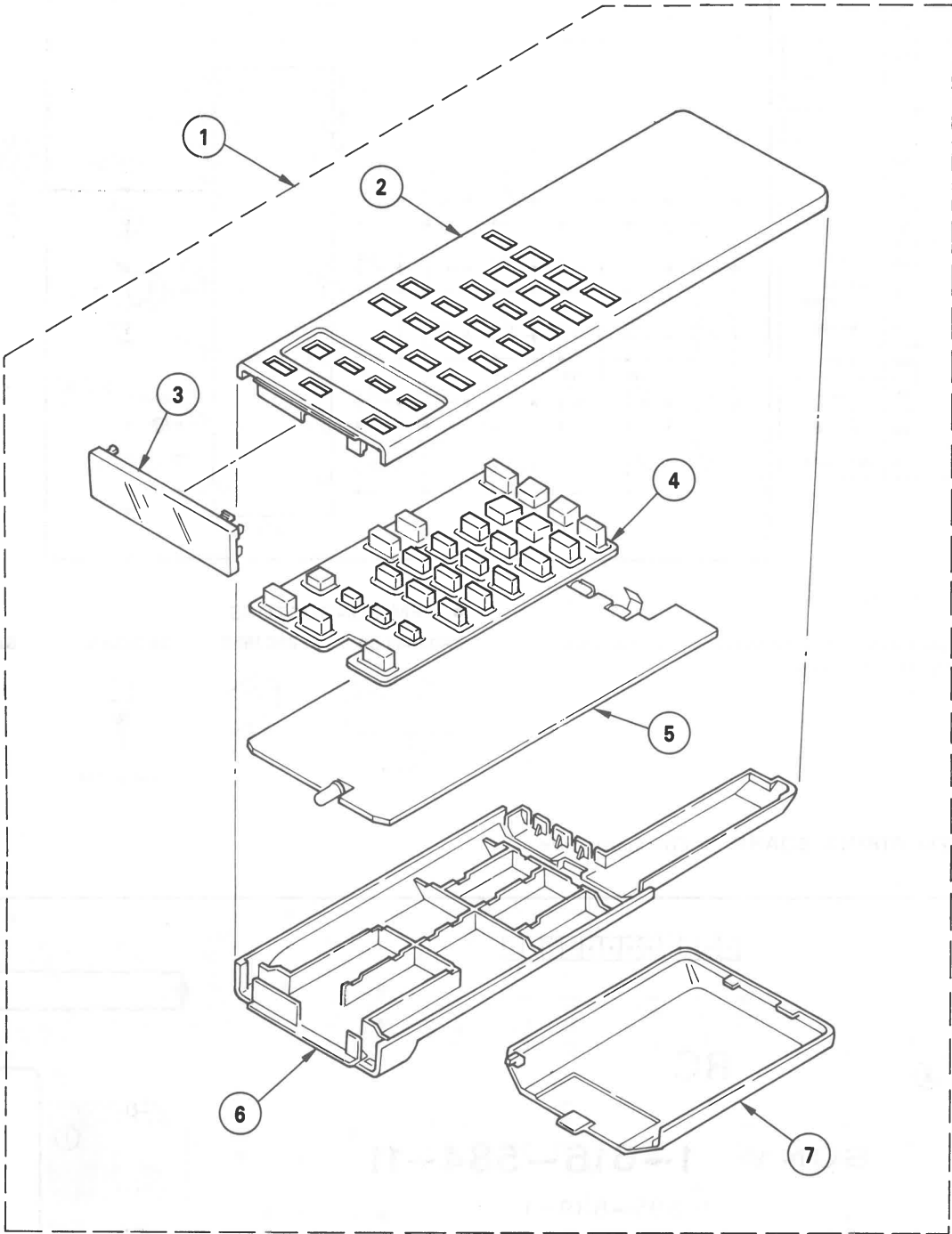
## 7-2. PRINTED WIRING BOARD – *Conductor Side* –



Rc

7-3. EXPLODED VIEW

- NOTE:
  - Items with no part number and no description are not stocked because they are seldom required for routine service.
  - The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	A-1470-710-A	COMMANDER ASSY (RM-731)	2-7	4	4-376-972-01	SHEET, SILICONE RUBBER	
2	X-4376-911-1	CASE ASSY, UPPER		5	*1-616-584-11	RC BOARD	
3	4-373-819-01	PLATE, FROSTED		6	4-373-824-11	CASE, LOWER	
				7	4-373-821-11	COVER, BATTERY	

7-4. ELECTRICAL PARTS LIST

- NOTE:
  - Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

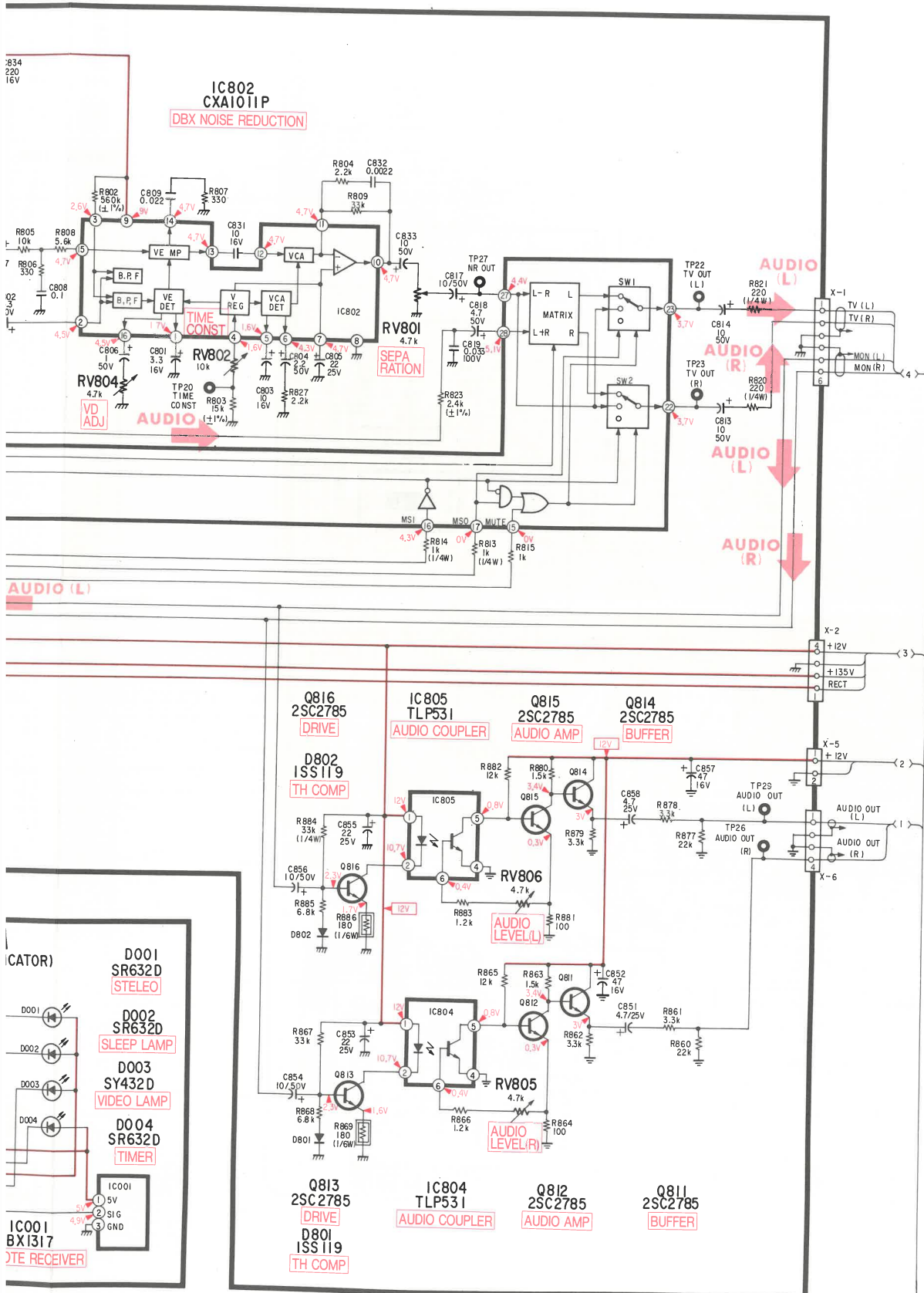
When indicating parts by reference number, please include the board name.

CAPACITORS		RESISTORS			
• MF : $\mu$ F, PF : $\mu$ F		• All resistors are in ohms			
<u>Ref.No.</u>	<u>Part No.</u>	<u>Description</u>			
	*1-616-584-11	RC BOARD			
		*****			
	4-350-924-00	TERMINAL (B), BATTERY			
	4-372-835-01	TERMINAL (A), BATTERY			
<u>CAPACITOR</u>					
C1	1-102-110-00	CERAMIC	220PF	10%	
C2	1-102-110-00	CERAMIC	220PF	10%	
<u>DIODE</u>					
D1	8-719-107-82	DIODE SE303AY			
<u>IC</u>					
IC1	8-759-920-81	IC CX23041-09			
<u>TRANSISTOR</u>					
Q1	8-729-965-22	TRANSISTOR 2SC1652			
<u>RESISTOR</u>					
R1	1-247-809-00	CARBON	120	5%	1/6W
R2	1-247-767-00	CARBON	2.2	5%	1/6W
<u>CRYSTAL</u>					
X1	1-527-476-41	OSCILLATOR, CERAMIC			

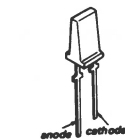
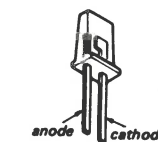
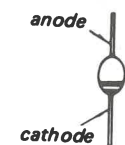
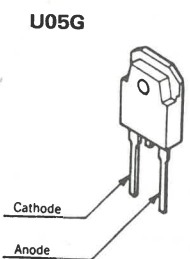
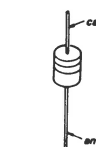
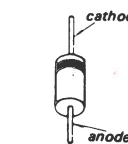
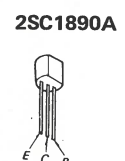
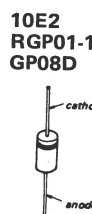
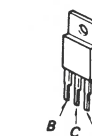
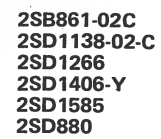
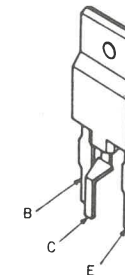
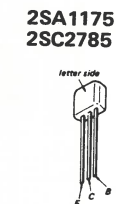
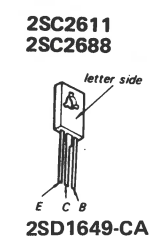
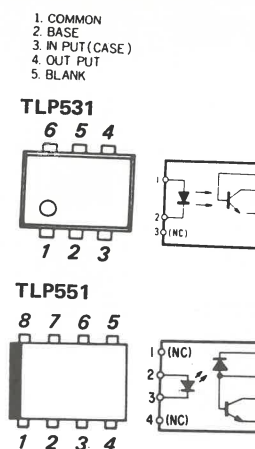
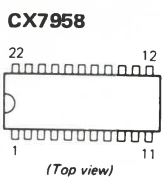
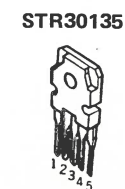
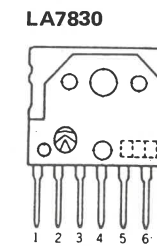
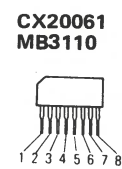
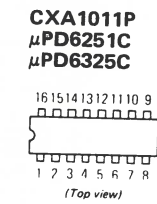
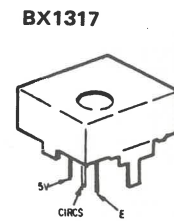




**(KV-1380R/RM-731)**



- **Semiconductor Lead Layouts**



### CAUTION

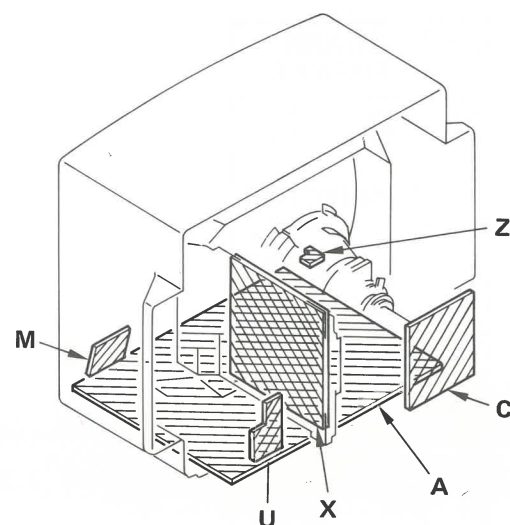
Be sure to connect the connector C-1 for safety.



- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 M $\Omega$  digital multimeter.
- Readings are taken with a color-bar signal input.
- — : B+ bus.
- - - - : B- bus.
- Voltage variations may be noted due to normal production tolerances.
- Voltages on A board are taken under conditions below.
  - CH-13 (VHF HIGH) signal is received.
  - VOLUME control is set to no sound position.
  - PICTURE button is set to the normal position.
- The hold down check point is TP85.
- : signal path.

**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

### CIRCUIT BOARDS LOCATION



### CAUTION

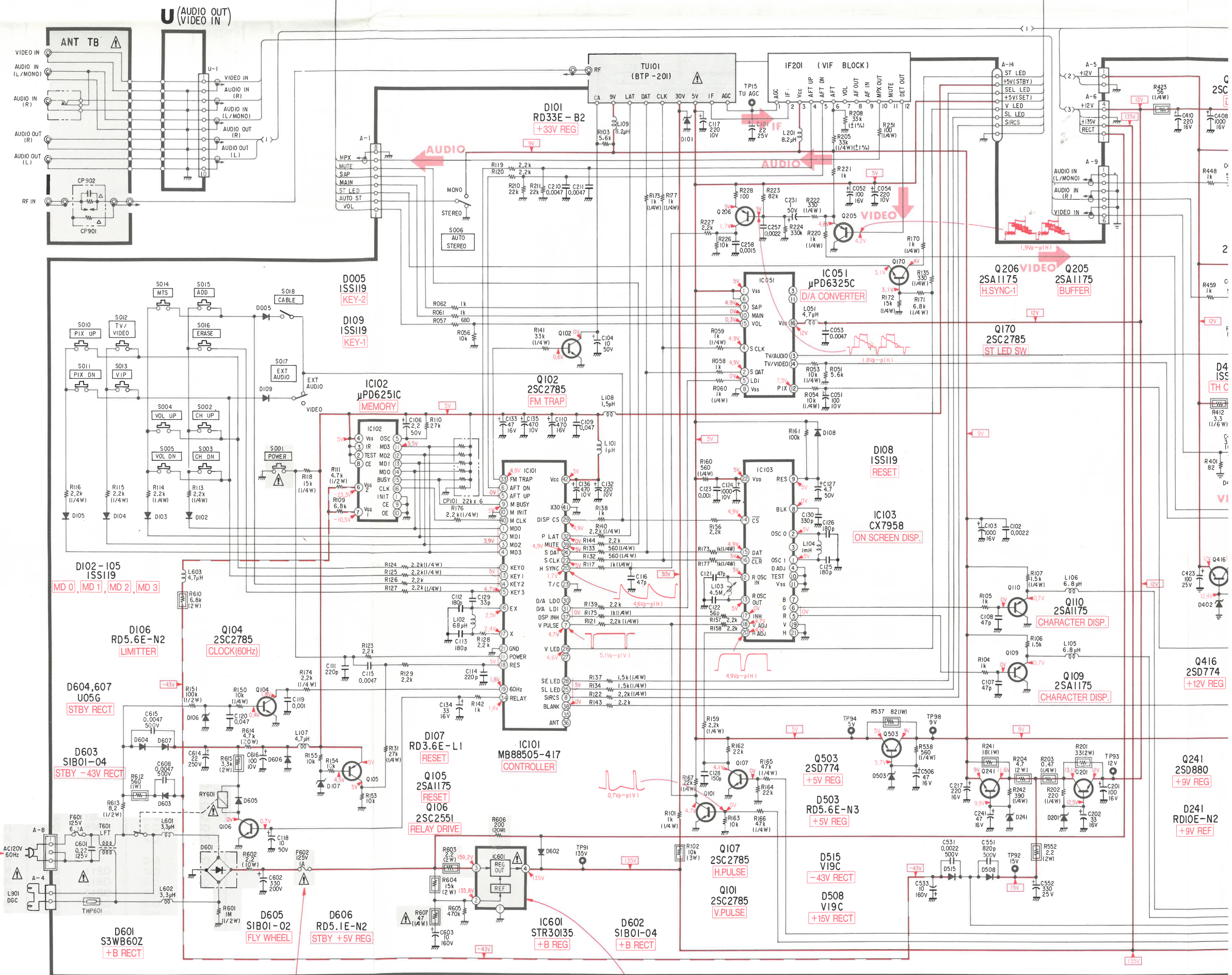
This set is equipped with a polarized ac power cord plug (one blade of the plug is wider than the other). When replacing the ac power cord, be sure to connect it with specified part number as shown in this diagram.

### CAUTION

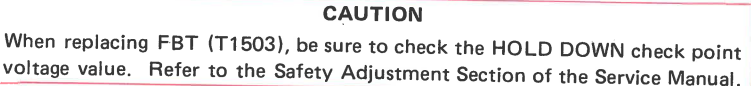
When taking a broken fuse (F602) off, discharge across C602 to avoid shock hazard.

### CAUTION

When replacing IC601, be sure to check the +B line voltage value. Refer to the Safety Adjustment Section.









## PRINTED WIRING BOARDS<sup>2</sup>

**Note:** All mounting diagrams are viewed from conductor side.

— Conductor Side —

### RF AGC ADJUSTMENT

IF201 = F-10

1. Turn in an off-air signal.
2. Adjust AGC VR (AGC VR of IF201) so that snow noise and cross-modulation just disappear from the picture.

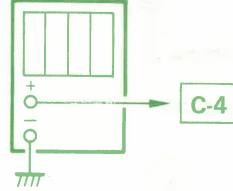
## H. FREQUENCY

RV501 = C-5

- *V. CENT SW (S501)* . . . . . *center position*
- *H. CENT* . . . . . *center position*
- *V. SIZE (RV503)* . . . . . *mechanical center*

1. Feed in a monoscope signal.
2. Adjust RV501 so that voltage on pin (11) of IC301 is  $3.2 \pm 0.1$  V dc.

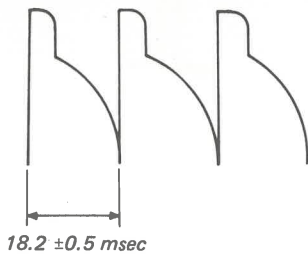
digital  
multimeter



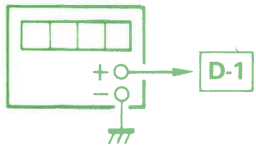
## V. FREQUENCY

RV502 = C-2

1. No signal input.
2. Connect frequency counter across pin (2) of IC501 and ground.
3. Adjust RV502 for  $55 \pm 0.5$  Hz on the frequency counter.



frequency  
counter



**V. SIZE**

RV503 = F-3

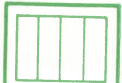
1. Receive a strong off-air signal.
2. Set the V. SIZE (RV503) to obtain a suitable picture.

## V. BIAS

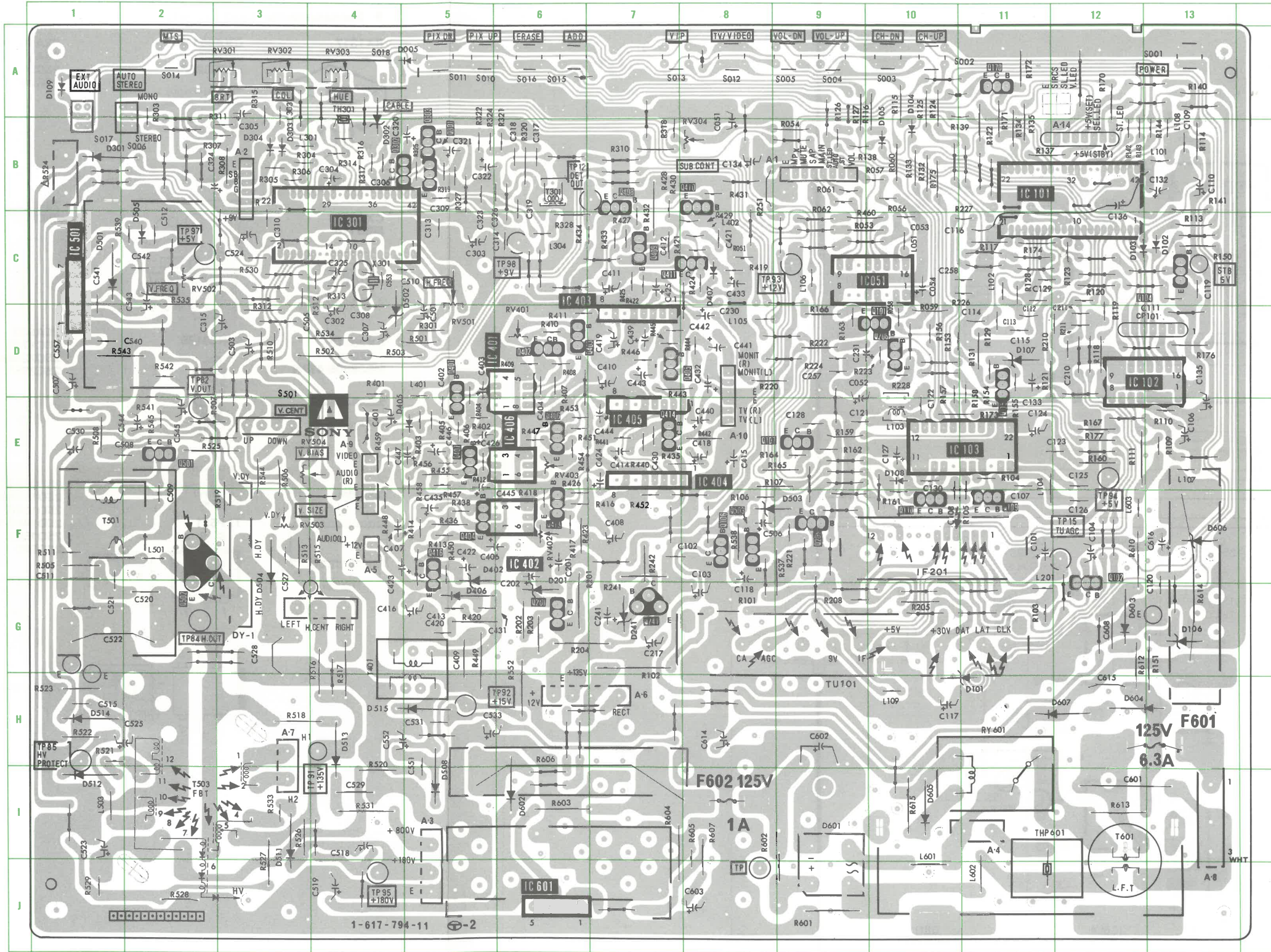
RV504 = E-4

1. Receive a cross-hatch pattern.
2. Set the **PICTURE** control for initial setting.
3. Connect the digital multimeter across **DY** connector (V. DY  $\ominus$ ) and ground.
4. Adjust to  $12.0 \pm 0.2$  V dc with RV504 (V. BIAS).

*digital  
multimeter*



[ POWER SUPPLY, TUNER, VIF, SIF, AGC,  
Y AMP, CHROMA, CUSTOMER CONTROL,  
V. DEF, DISPALY CONTROL, H. DEF,  
REMOTE CONTROL ]



### SIGNAL SET UP

*V MAIN (L+R) signal : 400 Hz, 247 mVrms (0.7 Vp-p) at TP21 100% modulation ( $\pm 25$  kHz deviation).*

1/ C11D (I - D) signal : 1000 Hz 1 A 1/2 m 150 kV - 1000 Hz

SAP VCO

RV811 = B-6

1. Supply a 78.67 kHz, 0.42 Vp-p sine wave signal to TP21 (MPX IN) terminal.
2. Connect the pin (14) of IC801 and TP99.  
At this point, let the DC current voltage to pin (25) of

## NOISE REDUCTION TIME CONSTANT

RV802 = A-3

1. No signal mode.
2. Adjust RV802 to obtain  $837 \pm 15 \text{ mV}$ , with connecting as the +pin of the digital multimeter to R803 and -pin

A

## CONNECTOR

A1	B-9
A2	B-3
A3	I-5
A4	I-11
A5	F-4
A6	H-7
A7	H-3
A8	I-13
A9	E-4
A10	D-8

## CAPACITOR

C051	B-8
C052	D-9
C053	C-10
C054	C-10
C101	F-11
C102	F-7
C103	G-8
C104	F-12
C106	E-13
C107	F-11
C108	F-10
C109	B-13
C110	B-13
C111	C-13
C112	D-11
C113	D-11
C114	D-11
C115	D-11
C116	C-11
C117	H-10
C118	F-8
C119	C-13
C120	F-13
C121	E-9
C122	E-10
C123	E-12
C124	E-11
C125	E-12
C126	F-12
C127	E-10
C128	E-9
C129	C-11
C130	E-10
C132	B-13
C133	D-11
C134	B-8
C135	D-13
C136	B-12
C201	F-6
C202	F-6
C210	D-12
C211	D-12
C217	E-7
C230	D-8
C231	D-9
C241	E-7
C257	D-9
C258	C-11
C302	D-4
C303	C-5

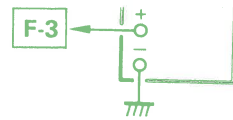
**X**



A

CONNECTOR		FUSE		Q205		R134		R319		R507		SWITCH		
A1	B-9	C304	B-4	C520	G-2	Q206	F-9	R135	B-11	R320	B-6	R508	E-1	S001 A-13 S002 A-10 S003 A-10 S004 A-9 S005 A-9 S006 A-2 S010 A-5 S011 A-5 S012 A-8 S013 A-7  S014 A-2 S015 A-6 S016 A-6 S017 A-1 S501 E-3
A2	B-3	C305	B-3	C521	G-1	Q206	D-10	R135	B-11	R320	B-6	R508	E-1	
A3	I-5	C306	B-4	C522	G-1	Q241	G-7	R137	B-11	R321	B-6	R510	D-3	
A4	I-11	C307	D-4	C523	I-1	Q301	B-5	R138	B-9	R322	B-5	R511	F-1	
A5	F-4	C308	D-4	C524	C-3	Q302	B-4	R139	A-10	R324	B-5	R512	C-4	
A6	H-7	C309	B-5	C525	H-2	Q303	B-5	R140	A-13	R325	B-5	R513	F-3	
A7	H-3	C310	C-3	C527	F-3	Q401	D-5	R141	B-13	R327	B-5	R515	F-4	
A8	I-13	C313	C-5	C528	G-3	Q402	D-6	R142	B-12	R328	C-6	R516	G-4	
A9	E-4	C314	C-6	C529	I-4	Q403	D-6	R143	B-12	R401	D-4	R517	G-4	
A10	D-8	C315	D-3	C530	E-1	Q404	F-5	R144	B-13	R402	E-5	R518	H-3	
DY1	F-3	C317	B-6	C531	H-5	Q405	D-7	R150	C-13	R403	E-5	R519	F-3	
R524	B-1	C318	B-6	C533	H-5	Q406	E-6	R151	G-13	R404	E-5	R520	I-3	
		C319	B-6	C540	D-1	Q407	E-5	R153	D-10	R405	E-5	R521	H-1	
		C320	B-5	C541	C-1	Q408	B-8	R154	D-11	R406	E-5	R522	H-1	
		C321	B-5	C542	C-2	Q409	C-7	R155	D-11	R407	D-6	R523	H-1	
CAPACITOR		C322	B-5	C543	C-2	Q410	B-8	R156	D-10	R408	D-6	R524	B-1	
C051	B-8	C323	B-5	C544	E-2	Q411	C-8	R157	D-10	R409	D-6	R525	E-2	
C052	D-9	C325	C-4	C545	E-2	Q413	F-6	R158	D-11	R410	D-6	R526	I-3	
C053	C-10	C326	B-6	C551	H-5	Q414	E-7	R159	E-9	R411	D-6	R527	I-3	
C054	C-10	C401	E-4	C552	H-4	Q416	F-5	R160	E-12	R412	E-5	R528	J-2	
C101	F-11	C402	D-5	C553	C-4	Q501	E-2	R161	F-10	R413	F-5	R529	J-1	
C102	F-7	C403	D-5	C557	D-1	Q502	F-2	R162	E-9	R414	F-5	R530	C-3	
C103	G-8	C404	D-6	C601	I-12	Q503	F-8	R163	D-9	R416	F-6	R531	I-4	
C104	F-12	C406	F-5	C602	H-9			R164	E-9	R417	F-6	R533	I-3	
C106	E-13	C407	F-4	C603	J-8	RESISTOR		R165	E-9	R418	F-6	R534	D-4	
C107	F-11	C408	F-7	C608	G-12			R166	D-9	R419	C-8	R535	C-2	
C108	F-10	C409	G-5	C614	H-8			R167	E-12	R420	G-9	R537	F-9	
C109	B-13	C410	D-7	C615	H-12			R170	A-12	R421	C-8	R538	F-8	
C110	B-13	C411	C-7	C616	F-13			R171	B-11	R422	C-7	R539	C-2	
C111	C-13	C412	C-7					R172	A-11	R423	F-6	R541	E-2	
C112	D-11	C413	G-5	DIODE				R173	E-11	R424	C-8	R542	D-2	
C113	D-11	C414	E-7	D005	A-5			R174	C-11	R425	C-7	R543	D-2	
C114	D-11	C415	E-8	D101	H-11			R175	B-10	R426	F-6	R544	E-3	
C115	D-11	C416	G-5	D102	C-13			R176	D-13	R427	C-7	R545	E-2	
C116	C-11	C418	E-8	D103	C-12			R195	G-6	R428	B-7	R552	H-6	
C117	H-10	C419	D-7	D106	G-9			R201	G-6	R429	C-8	R601	J-9	
		C420	G-5	D107	D-11			R202	G-6	R430	B-7	R602	I-8	
C118	F-8	C421	C-8	D108	E-10			R203	G-6	R431	B-8	R603	I-6	
C119	C-13	C422	F-5	D109	A-1			R204	G-6	R432	C-7	R604	I-7	
C120	F-13	C423	F-4					R205	G-10	R433	C-7	R605	I-8	
C121	E-9	C424	E-7	D201	G-6			R208	G-9	R434	C-7	R606	H-6	
C122	E-10	C425	C-7	D241	G-7			R210	D-11	R435	E-7	R607	I-8	
C123	E-12	C430	E-5	D301	B-1			R211	D-12	R436	F-5	R610	F-12	
C124	E-11	C431	G-5	D302	B-4			R220	D-8	R438	F-5	R612	G-12	
C125	E-12	C432	D-8	D303	B-3			R221	F-9	R440	E-7	R613	I-12	
C126	F-12	C433	C-8	D304	B-5			R222	D-9	R441	E-7	R614	G-13	
C127	E-10	C434	F-5	D305	C-2			R223	D-10	R442	E-8	R615	I-10	
		C435	D-7	D402	F-5			R224	D-9	R443	D-7			
C128	E-9	C439	D-7	D405	E-5			R226	C-11	R444	D-8			
C129	C-11	C440	E-8	D406	G-5			R227	C-11	R445	D-7			
C130	E-10			D407	C-8									
C132	B-13	C441	D-8	D501	C-1			R228	D-10	R446	D-7			
C133	D-11	C442	D-8	D502	D-4			R241	F-7	R447	E-6			
C134	B-8	C443	D-7	D503	F-8			R242	F-7	R448	F-4			
C135	D-13	C444	E-7	D504	F-3			R251	B-8	R449	G-5			
C136	B-12	C445	E-5	D505	C-2			R301	D-5	R450	F-5			
C201	F-6	C446	E-5	D508	I-5			R303	A-2	R451	E-6			
C202	F-6	C447	E-5	D511	I-3			R304	B-3	R452	F-7			
		C501	D-5	D512	I-1			R305	B-3	R453	E-6			
C210	D-12	C503	D-3	D513	H-4			R306	B-3	R454	E-6			
C217	E-7	C505	C-3	D514	H-1			R307	B-3	R455	E-5			
C230	D-3	C506	F-8	D515	H-5					R456	E-5			
C231	D-9	C507	D-1	D601	I-9			R308	B-3	R457	E-5			
C241	E-7	C508	E-2	D602	I-6			R310	B-7	R458	E-5			
C257	D-9	C509	F-2	D603	G-12			R311	B-3	R459	E-4			
C258	C-11	C510	C-5	D604	H-12			R312	D-3	R460	C-9			
C302	D-4	C511	F-1	D605	I-10			R313	C-4	R501	D-5			
C303	C-5	C512	C-2	D606	F-13			R314	B-4	R502	D-4			
		C515	H-1	D607	H-12			R316	B-4	R503	D-4			
		C518	I-4					R317	B-4	R505	F-1			
		C519	J-4					R318	B-7	R506	E-3			
										VARIABLE RESISTOR				

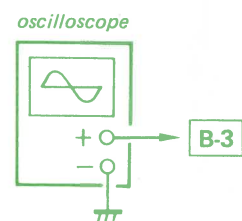
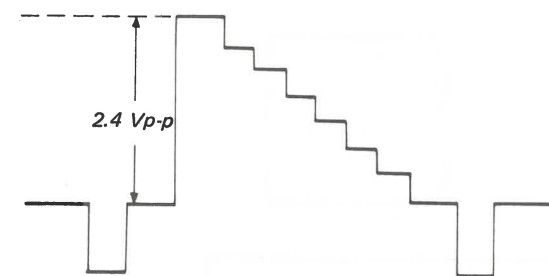




# SUB PICTURE

RV304 = B-8

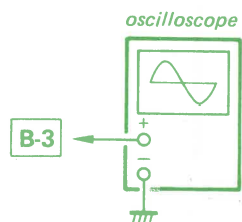
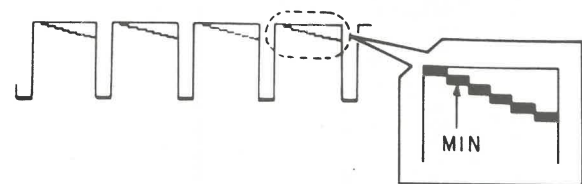
1. Feed in a color-bar signal.
  - PIC VR . . . MAX
  - BRT VR . . . center position
  - COL VR . . . MIN
  - HUE VR . . . center position
2. Connect an oscilloscope to the pin (24) of IC301. Turn RV304 and adjust to 2.4 Vp-p.



# 3.58 MHz TRAP

T301 = B-6

1. Feed in a color-bar signal.
  - PIC VR . . . MAX, BRT VR . . . center position
  - COL VR . . . MIN, HUE VR . . . center position
2. Connect an oscilloscope to the pin (24) of IC301.
3. Adjust by T301 so that chroma-components become minimum.

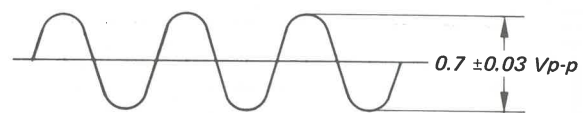


V SUB (L-R) signal : 400 Hz, 1.4 Vp-p (50 kHz deviation) at TP21.  
 V SAP signal : 400 Hz 100% modulation ( $\pm 10$  kHz deviation) 0.42 Vp-p at TP21.  
 Carrier: 78.67 kHz ( $\pm 15$  kHz deviation)  
 V ST signal : Carrier: 15.734 kHz, 0.14 Vp-p ( $\pm 5$  kHz deviation) at TP21.

# MPX LEVEL ADJUSTMENT

RV807 = A-6

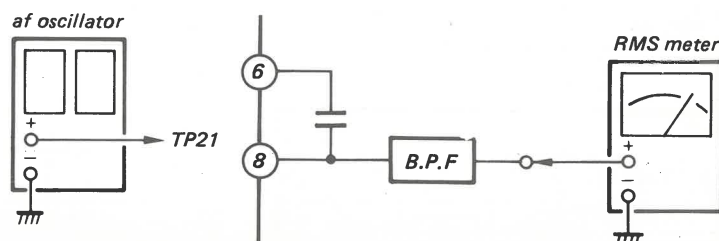
1. Receive 400 Hz (100% modulation) sound signal.
2. Connect an oscilloscope to TP21 (MPX IN).
3. Adjust RV807 so that the MPX level is  $0.7 \pm 0.03$  Vp-p.



# SAP FILTER

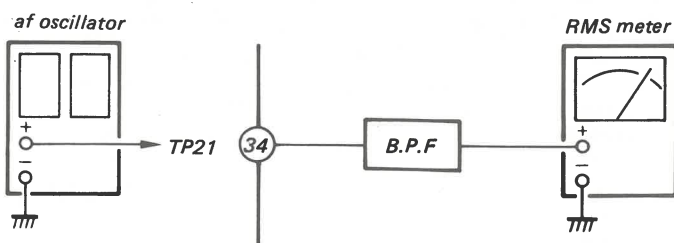
RV812 = A-6

1. Supply a 62.94 kHz, 0.42 Vp-p sine wave signal to TP21 (MPX IN) terminal.
2. Connect the B.P.F (62.94 kHz) to pin (8) of IC801.
3. Adjust RV812 (SAP FILTER) to minimum.



# STEREO FILTER

1. Supply a 78.67 kHz, 0.42 Vp-p sine wave signal to TP21 (MPX IN) terminal.
2. Connect the B.P.F (78.67 kHz) and RMS meter to pin (34) of IC801.
3. Confirm that the on RMS meter is less than 30 mVrms.

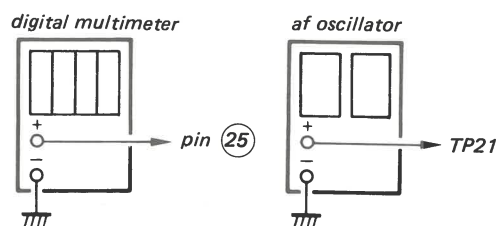


# H SIZE ADJUSTMENT

H.CENT = G-4

1. Adjust H.CENT to set for the best picture.
2. If item 1 can not attained, connect the 0.047  $\mu$ F MYLAR capacitor (C526) in parallel with C528 on the A board.

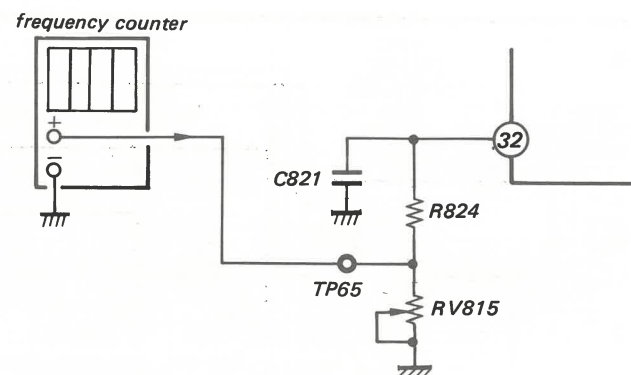
- At this point, let the DC current voltage to pin (25) of IC801 to become  $V_a$  then, confirm that the  $V_a$  at this point is  $V_a = 3.4 \pm 0.3$  V dc.
3. Connect the pin (14) of IC801 and ground. At this point, let the DC current voltage to pin (25) of IC801 to become  $V_b$ .
4. Adjust RV811 (SAP VCO) so that  $V_b$  becomes.  $V_b = V_a \pm 0.1$  V dc



# STEREO VCO

RV815 = A-3

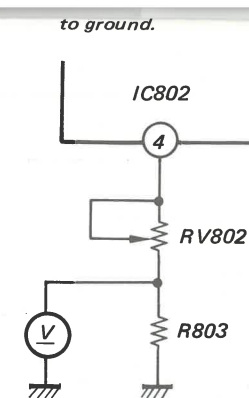
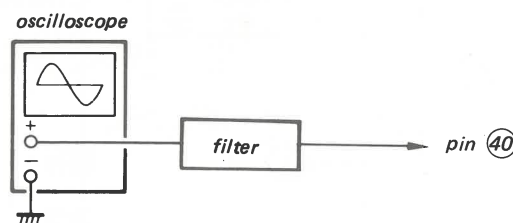
1. Connect a 10  $\mu$ F capacitor to TP21 (MPX IN) and ground.
2. Connect a frequency counter to the center tap of RV815 (ST VCO).
3. Adjust RV815 for 62.94  $\pm 0.1$  kHz frequency.



# PILOT CANCEL ADJUSTMENT

RV817 = B-4

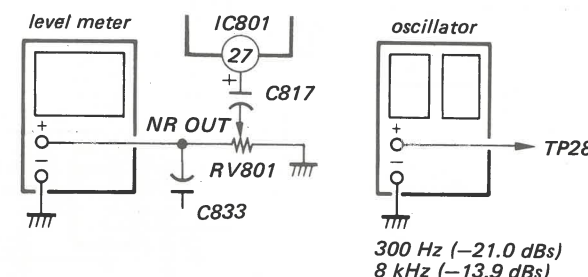
1. Supply a VST signal to TP21 (MPX IN) terminal, set the DECODER into MAIN mode.
2. Adjust RV817 (PILOT CANCEL) so that the output from pin (40) of IC801 becomes minimum by observing it by using an oscilloscope and viewing it through a filter ( $f_H = 15.734$  kHz Bandpass filter).
3. Confirm that the STEREO LED is lit.



# PRE-VARIABLE DE-EMPHASIS ADJUSTMENT

RV804 = A-1

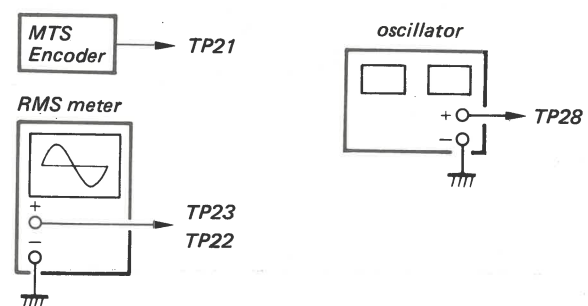
1. Open pin 24 of IC801.
2. Input sine wave of 300 Hz,  $-21.0$  dBs with TP28 (NR IN). At this point, let the level of C833 to become  $V_1$ .
3. Input sine wave of 8 kHz,  $-13.9$  dBs with TP28 (NR IN) in a similar as step 2. At this point, let the level of C833 to become  $V_2$ .
4. Adjust RV804 (VD ADJ) so that the relationship between  $V_1$  and  $V_2$  becomes  $V_2 = V_1 - (11.3 \pm 0.3)$  dBs.



# PRE-SEPARATION

RV801 = B-3

1. Supply a V MAIN signal to TP21 (MPX IN) terminal.
2. Set the DECODER into MAIN mode.
3. At this point, read the level to TP23 (TV-R OUT) and let it to become VR. Then, confirm that VR is  $480 \pm 48$  mVrms.
4. Supply a VST signal to TP21 (MPX IN) terminal. Stop the input of V MAIN which has been input previously. Keep the DECODER into MAIN mode.
5. As in the similar procedure of the Variable Deemphasis. Adjustment, input sine wave of 300 Hz,  $-18.0$  dBs with TP28 (NR IN).
6. At this point, when the level of TP22 (TV-L OUT) is assumed to be VL, adjust RV801 (SEPARATION) so that  $VL = VR \times 1/4 \pm 3.0$  mVrms is obtained.



# SAP LEVEL

1. Receive (SUB S. ENCOD
2. Set the
3. Connect
4. Adjust

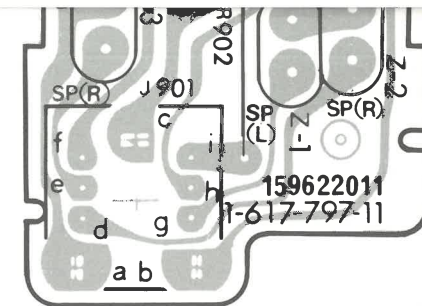
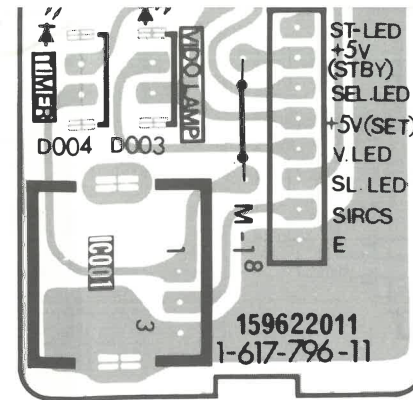
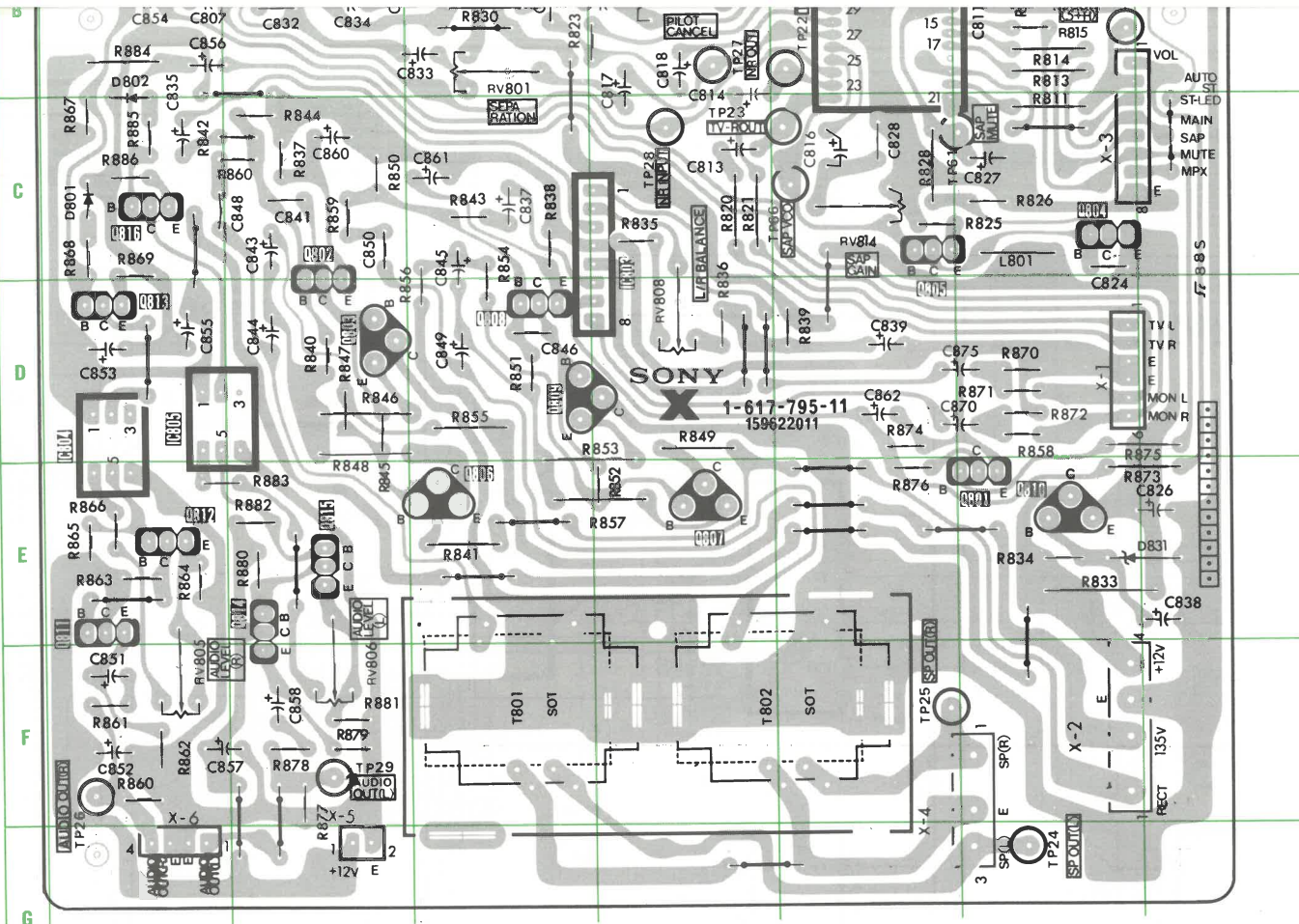
# MTS Encoder

# (L-R) LEVEL

1. Receives (SUB S. ENCOD
2. Set the
3. Connect
4. Adjust

# MTS Encoder

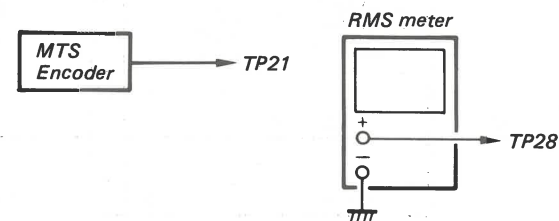




#### SAP LEVEL

RV814 = C-5

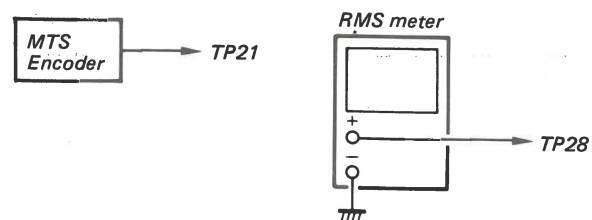
1. Receives a composite signal.  
(SUB SAP signal and STEREO PILOT signal) from a MTS ENCODER to TP21 (MPX IN) terminal.
2. Set the SAP mode.
3. Connect the RMS meter to TP28 (NR IN).
4. Adjust RV814 for  $489 \pm 15$  mVrms.



#### (L-R) LEVEL

RV816 = A-4

1. Receives a composite signal.  
(SUB SAP signal and STEREO PILOT signal) from a MTS ENCODER to TP21 (MPX IN) terminal.
2. Set the MAIN mode.
3. Connect RMS meter to TP28 (NR IN).
4. Adjust RV816 (L-R GAIN) for  $489 \pm 15$  mVrms.



#### AV INPUT/OUTPUT LEVEL ADJUSTMENT

RV401 = D-6 RV402 = F-6 RV403 = E-6  
RV801 = B-3 RV805 = F-1 RV806 = F-2

1. Connect an oscilloscope to the DET OUT (TP12).
2. Input the specified signal to RF/VIDEO and turn the RF/VIDEO selection switch ON and OFF, and adjust with RV401 so that both the Y signal levels become equivalent.  
Input signal  
RF: color-bar 87.5% TV modulation  
VIDEO: color-bar 75% 0.82 Vp-p 75  $\Omega$  sync negative
3. Connect an oscilloscope to TP22 (TV L OUT) and TP23 (TV R OUT).
4. Input the specified signal to RF/VIDEO (L) and (R) and turn the RF/VIDEO selection switch ON and OFF, and adjust with RV402 and RV403 so that both the signal levels become equivalent. Then, terminate TP26 (AUDIO OUT R) and TP29 (AUDIO OUT L) with 47 k $\Omega$  respectively, and adjust with RV805 (R) and RV806 (L) so that the output level becomes 408 mVrms.  
Input signal  
RF: dot signal. AUDIO 400 Hz (100% modulation)  
AUDIO: 400 Hz  $-5.62$  dBs (0.408 Vrms)

#### L/R BALANCE ADJUSTMENT

RV808 = D-4

1. Input the specified signal to RF and adjust with RV808 (L/R BALANCE) so that the levels of TP25 (SP OUT R) and TP24 (SP OUT L) become equivalent at the VOL. MAX.  
Input signal  
RF: dot signal. AUDIO 400 Hz (100% modulation)  
AUDIO: 400 Hz  $-5.62$  dBs (0.408 Vrms)

X

CAPACITOR		C855 D-1 C856 B-1 C857 F-1 C858 F-2 C860 C-2 C861 C-3 C862 D-5 C870 D-6 C875 D-6 C899 A-5	RESISTOR	R855 D-3 R856 D-3 R857 E-4 R858 D-6 R859 C-2 R860 F-1 R861 F-1 R862 F-1 R863 E-1 R864 E-1  R865 E-1 R866 E-1 R867 C-1 R868 C-1 R869 C-1 R870 D-6 R871 D-6 R872 D-6 R873 E-7 R874 D-5  R875 D-7 R876 E-5 R877 F-2 R878 F-2 R879 F-2 R880 E-2 R881 F-2 R882 E-2 R883 E-2 R884 B-1  R885 C-1 R886 C-1	TRANS- FORMER
C801 A-2 C802 B-1 C803 B-3 C804 B-3 C805 B-2 C806 A-2 C807 B-1 C808 A-1 C809 A-1 C810 A-6			R802 A-3 R803 A-3 R804 B-2 R805 B-1 R806 A-1 R807 A-1 R808 A-1 R809 B-2 R811 C-6 R813 B-6  R814 B-6 R815 B-6 R816 B-6 R817 A-6 R818 A-6 R819 A-6 R820 C-4 R821 C-4 R822 A-4 R823 B-4  R824 B-4 R825 C-6 R826 C-6 R827 B-3 R828 C-5 R829 A-6 R830 B-3 R831 A-5 R833 E-6 R834 E-6  R835 C-4 R836 D-4 R837 C-2 R838 C-3 R839 D-5 R840 D-2 R841 E-3 R842 C-2 R843 C-3 R844 C-2  R845 D-2 R846 D-2 R847 D-2 R848 D-2 R849 D-4 R850 C-2 R851 D-3 R852 E-4 R853 D-4 R854 C-3		T801 F-3 T802 F-4
C811 B-6 C812 A-6 C813 C-4 C814 C-4 C815 A-4 C816 C-5 C817 B-4 C818 B-4 C819 B-3 C820 B-4		DIODE			CONNECTOR
C821 B-4 C822 A-4 C823 A-4 C824 C-6 C825 A-5 C826 E-7 C827 C-6 C828 C-5 C829 B-7 C830 A-6		D801 B-5 D802 B-1 D831 E-7			
C831 A-2 C832 B-2 C833 B-3 C834 B-2 C835 C-1 C837 C-3 C838 E-7 C839 D-5 C841 C-2 C843 C-2		IC			VARIABLE RESISTOR
C844 D-2 C845 C-3 C846 D-3 C848 C-2 C849 D-3 C850 C-2 C851 F-1 C852 F-1 C853 D-1 C854 B-1		IC801 B-5 IC802 A-2 IC803 C-4 IC804 D-1 IC805 D-1			
		COIL			
		L801 C-6			
		TRAN- SISTOR			
		Q801 E-6 Q802 C-2 Q803 D-2 Q804 C-6 Q805 C-5 Q806 E-3 Q807 E-4 Q808 D-3 Q809 D-3 Q810 E-6  Q811 E-1 Q812 E-1 Q813 D-1 Q814 E-2 Q815 E-2 Q816 C-1			

# KV-1380R

## RM-731

# SONY<sup>®</sup>

# SERVICE MANUAL

*US Model*

*Serial No. 8,000,001 and later*

*Chassis No. SCC-754D-A*

## SUPPLEMENT-1

File this supplement with the service manual.

### INTRODUCTION

	SEP-UP ADJUSTMENTS Addition . . . . .	2
SECTION 5	EXPLODED VIEWS has been changed . . . . .	5
SECTION 6	ELECTRICAL PARTS LIST (Difference list) . . .	6



## SET-UP ADJUSTMENTS

### (Adjusting Magnetizing-system ITC Picture Tube for Repair)

The magnetizing-system ITC (Integrated Tube Component) does not have a function to adjust the purity static convergence. Therefore, the cylindrical magnet attached to the deflection yoke has to be replaced with a 2.4.6-pole magnet at the same time when a picture tube is replaced.

The replacement and adjusting methods are described below.

- These adjustments should be performed with rated power supply voltage unless otherwise noted.
- Controls and switch should be set as follows unless otherwise noted:  
 PICTURE control . . . . . normal position  
 BRIGHTNESS control . . . . . click position

#### Preparations

1. Remove the clamping band from the deflection yoke and dismount the cylindrical magnet.
2. Mount the replacement parts and clamping band, which are contained in the package box containing the picture tube, in the position from which the cylindrical magnet was removed. (See Fig. 3-1.)

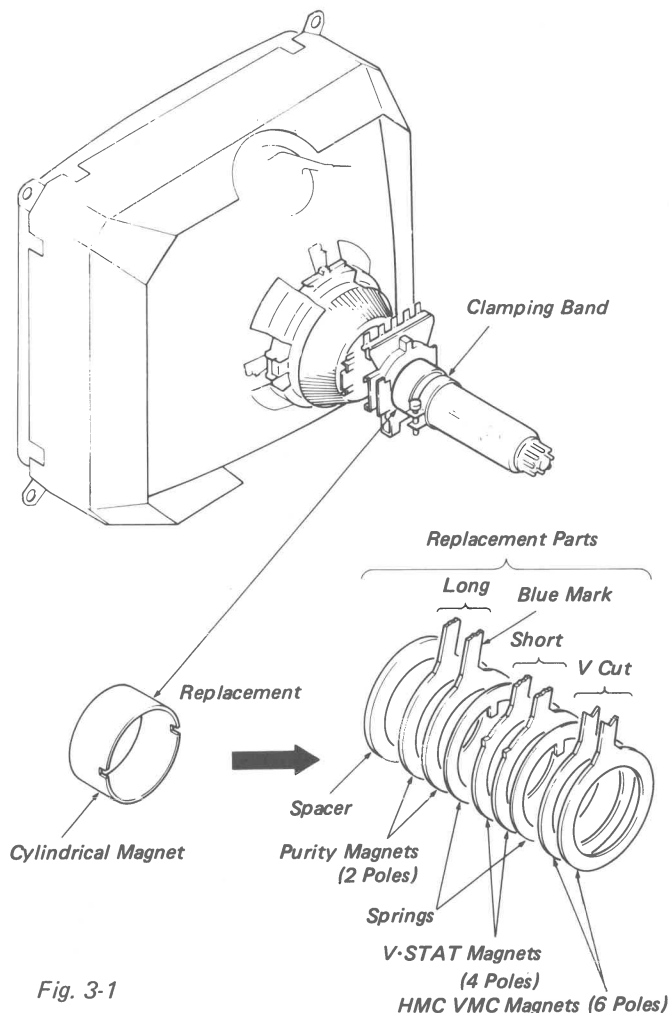


Fig. 3-1

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. White Balance

**Note:** Test Equipment Required.

1. Color-bar/Pattern Generator
2. Degausser
3. Oscilloscope

#### 3-1. BEAM LANDING

1. Face the set picture tube surface toward east or west to reduce the effects of terrestrial magnetism.
2. Reduce the magnetism of each correction magnet in the replacement parts to zero field. (See Fig. 3-2.)

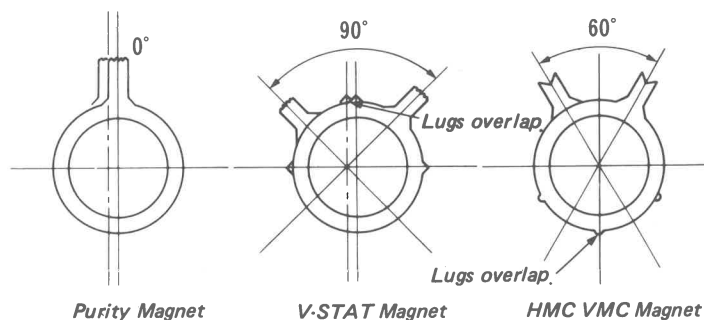


Fig. 3-2

3. Receive an all-white signal using a pattern generator.
4. Turn the set POWER switch on and demagnetize using a degausser.
5. Rotate the PICTURE control to NORMAL and the BRIGHTNESS control to the CLICK position.
6. Roughly adjust the white balance, screen, and convergence.
7. Rotate the red BKG VR (RV701) to the maximum position and the green and blue BKG VRs to the minimum positions.
8. Slide the deflection yoke backward to show red in the picture center and adjust the purity magnet to obtain a horizontal symmetry. (See Figs. 3-3, 3-4, and 3-5.)
9. Slide the deflection yoke forward to show red only throughout the picture.
10. Substitute green, then blue for red in step 7 and check landing.
11. Rotate red, green and blue once each and check landing.



12. Correct with the magnet if the landing in the corners cannot be adjusted. (See Fig. 3-5.)
13. Clamp the clamping band to fix the deflection yoke after deciding its position.

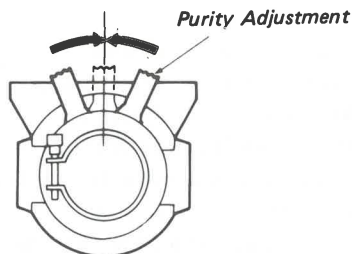


Fig. 3-3

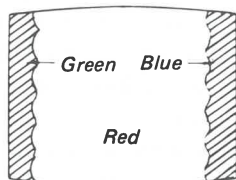


Fig. 3-4

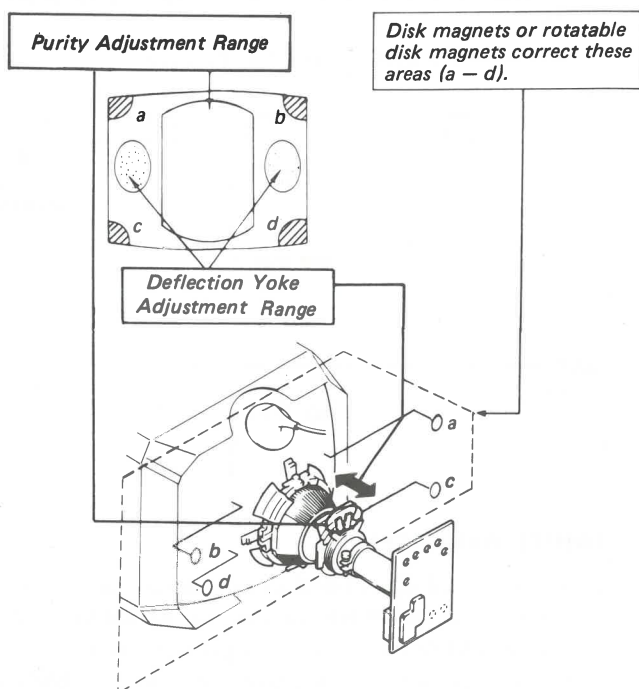


Fig. 3-5

### 3-2. CONVERGENCE

#### Preparation:

Roughly adjust the V·SIZE and focus.

#### (1) Horizontal and Vertical Static Convergence

1. Receive a dot signal using a pattern generator.
2. Rotate the BRIGHTNESS control to the minimum position and the PICTURE control to NORMAL.
3. Overlap the R and B dots in a horizontal direction in the center of the picture using the H·STAT VR knob. (See Fig. 3-6.)
4. Overlap the R and B dots in a vertical direction in the center of the picture using the V·STAT magnet (4-pole ring magnet). (See Fig. 3-7.)

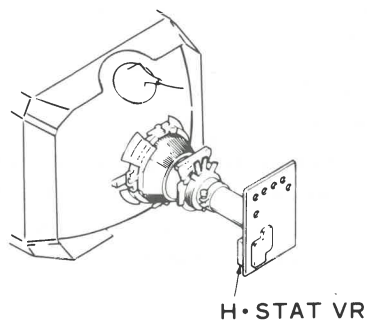


Fig. 3-6

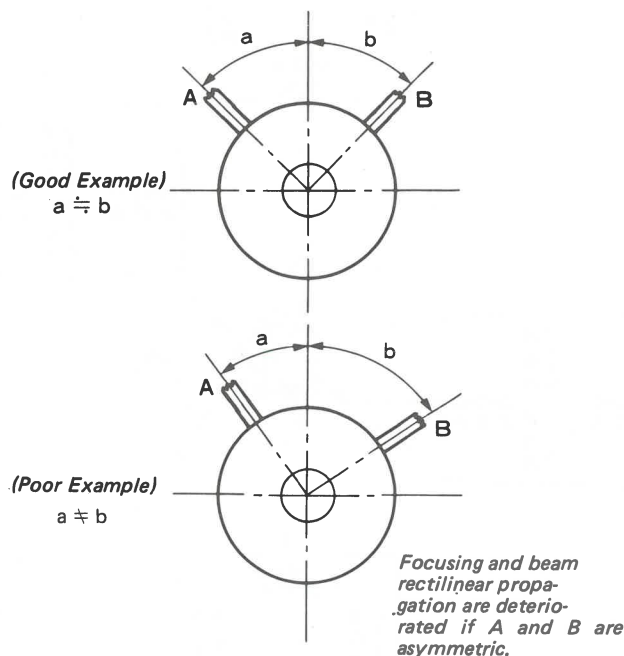


Fig. 3-7

5. Overlap the R and B·G dots in horizontal and vertical directions in the center of the picture using the HMC and VMC magnets (6-pole ring magnets). Adjust the correction amounts of the R and B·G dots by the opening angle of the magnets. Adjust the direction by rotating the two magnets simultaneously. (See Fig. 3-8.)

**NOTE:** If the H·CENT tap is changed over after adjusting H·STAT, readjust H·STAT.

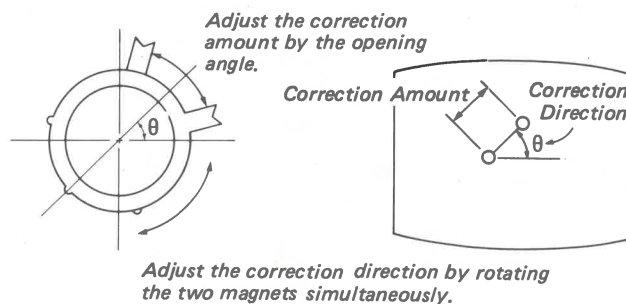


Fig. 3-8

**(2) Dynamic Convergnece Adjustment****Preparation:**

Before stating, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen the Clamping Band of deflection yoke.
2. Adjust the cross tilt misconvergence at the H and V axis ends in the picture to the best condition by oscillating the deflection yoke. (See Fig. 3-9.)

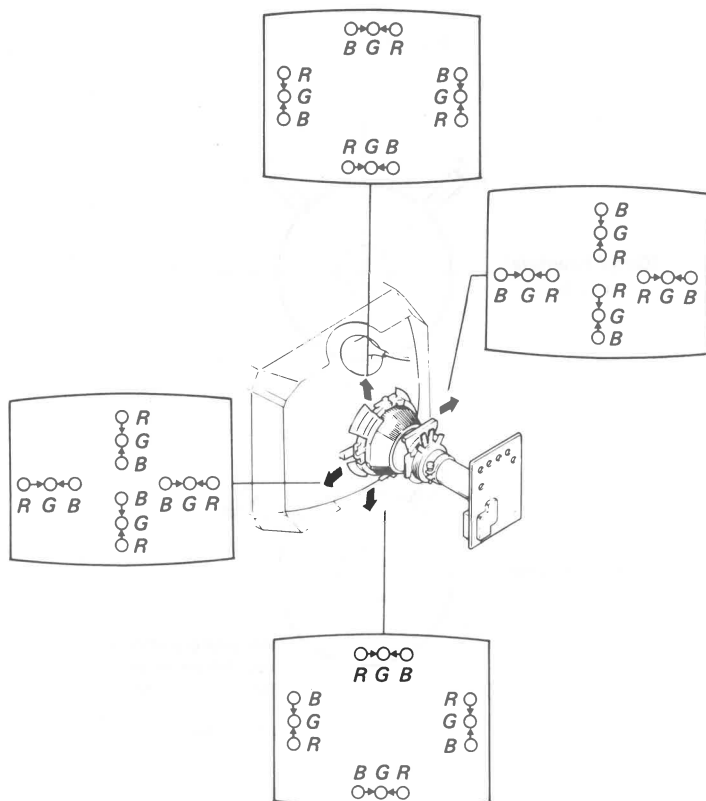


Fig. 3-9

3. Fix the deflection yoke by driving three wedges between the deflection yoke and picture tube funnel.
  4. Correct with Permalloy if the peripheral convergence cannot be corrected. (See Fig. 3-10.)
- Paint-lock each magnet after finishing adjustment so that the magnets can not move.

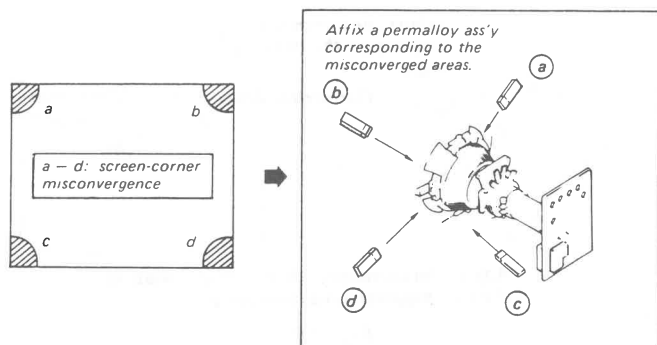


Fig. 3-10

**3-3. FOCUS ADJUSTMENT**

Adjust FOCUS control (RV707) for a best picture.

**3-4. WHITE BALANCE ADJUSTMENT****[SCREEN (G2)]**

1. Receive a dot signal using a pattern generator.
2. Rotate the BRIGHTNESS control to the minimum position and the PICTURE control to NORMAL.
3. Adjust BKG VRs (RV701, RV703, and RV705) so that voltages on the red, green and blue cathodes are 160 V dc with an oscilloscope as shown in Fig. 3-11.
4. Observe the screen and adjust SCREEN (RV706) to obtain the faintly visible background of dot signal. Note the color that first becomes visible by turning SCREEN VR.

Do not turn a BKG control for this color.

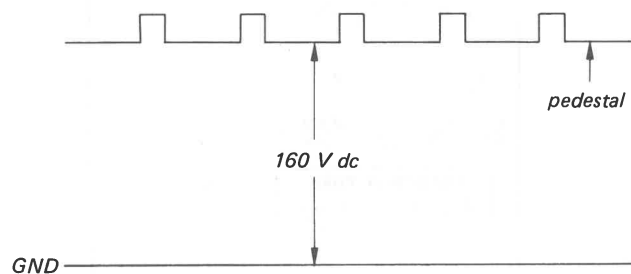
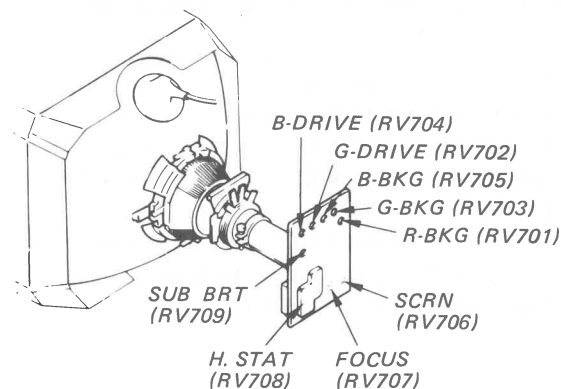


Fig. 3-11

**[WHITE BALANCE]**

1. Receive an all-white signal using a pattern generator.
2. Rotate the PICTURE control to NORMAL and the BRIGHTNESS control to the CLICK position.
3. Observe the screen and adjust the other two BKG VRs for best white balance.
4. Rotate the PICTURE control to maximum.
5. Observe the screen and adjust the DRIVE VRs (RV702, RV704) for best white balance.
6. Repeat steps 2 through 5 several times.



## SECTION 5

### EXPLODED VIEWS

## NOTE:

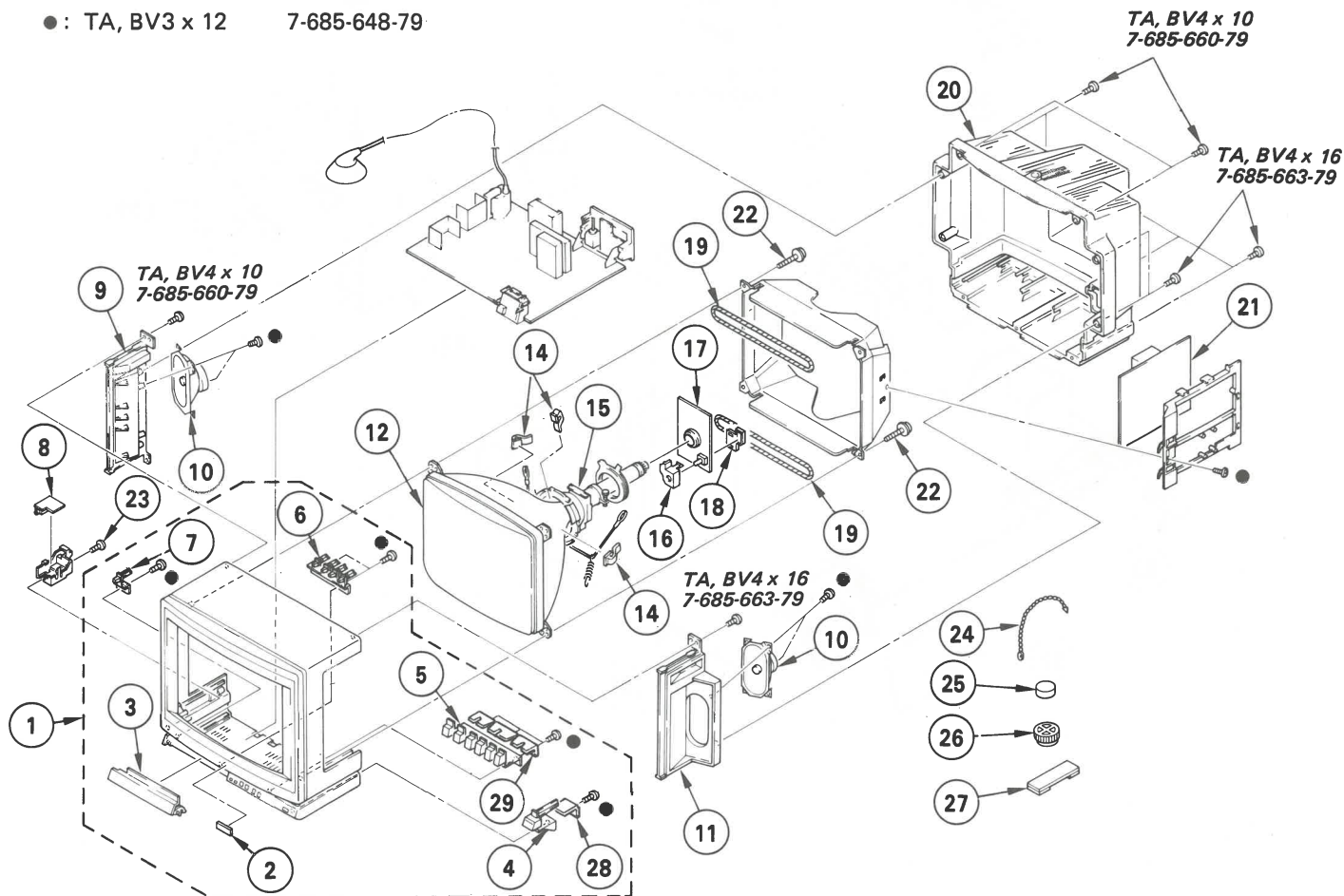
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

#### 5-1. PICTURE TUBE

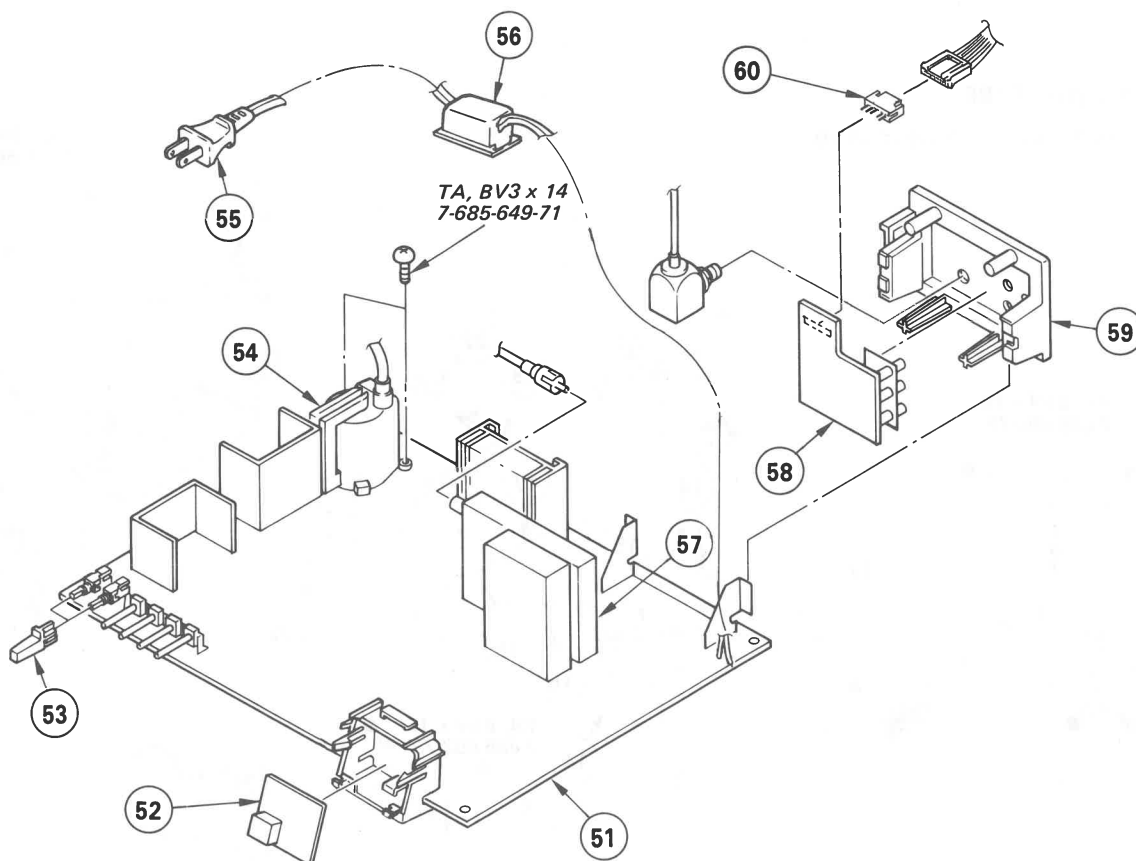
●: TA, BV3 x 12      7-685-648-79



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-4379-911-1	BEZEL ASSY	2-7, 28, 29	16	*4-374-912-01	COVER (MAIN), CV VOL	
2	4-378-208-01	EMBLEM, SONY		17	*A-1330-601-A	C BOARD, COMPLETE	
3	X-4379-902-2	DOOR ASSY, CONTROL		18	*4-374-913-01	COVER (REAR LID), CV VOL	
4	4-379-910-01	BUTTON, POWER		19	$\Delta$ 1-426-146-51	COIL, DEMAGNETIZATION	
5	4-379-921-01	BUTTON, UP/DOWN		20	4-379-917-21	COVER, REAR	
6	4-379-909-01	BUTTON, MULTI		21	*A-1386-027-A	X BOARD, COMPLETE	
7	4-379-902-01	BUTTON, MTS		22	4-307-249-00	SCREW, TAPPING (5X20)	
8	*1-617-797-11	Z BOARD		23	3-703-083-00	+ BV 3X25	
9	X-4379-903-1	PANEL (LEFT) ASSY, SPEAKER		24	4-308-870-00	CLIP, LEAD WIRE	
10	1-503-605-11	SPEAKER		25	1-452-032-00	MAGNET, DISK; 10MM $\phi$	
11	X-4379-904-1	PANEL (RIGHT) ASSY, SPEAKER		26	1-452-094-00	MAGNET, ROTABLE DISK; 15MM $\phi$	
12	$\Delta$ 8-735-553-75	PICTURE TUBE (A34JBU10X)		27	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	
14	3-703-961-01	SPACER, DY		28	*4-379-925-01	PLATE (B), STOPPER	
15	$\Delta$ 1-451-234-12	DEFLECTION YOKE (SY-125A)		29	*4-379-926-01	PLATE (A), STOPPER	

Serial No. 2,000,001 and later  
Serial No. 5,000,001 and later  
Serial No. 8,000,001 and later

## 5-2. CHASSIS



No.	Part No.	Description
51	*A-1296-156-A	A BOARD, COMPLETE
52	*1-617-796-11	M BOARD
53	4-379-901-01	BUTTON, SW
54	▲1-439-314-22	TRANSFORMER ASSY, FLYBACK
55	▲1-559-396-11	CORD, POWER

Remark	No.	Part No.	Description	Remark
	56	▲4-022-115-01	HOLDER, AC CORD	
	57	▲1-463-771-11	TUNER, ET (BTP-201A)	
	58	*1-618-661-21	U BOARD	
	59	▲1-537-004-11	TERMINAL BOARD ASSY, ANTENNA	
	60	*1-566-049-11	PIN, CONNECTOR 10P	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.



# SECTION 6

## ELECTRICAL PARTS LIST

### (Difference list)

Serial No.5000001 and Later						Serial No.8000001 and Later					
Ref.No.	Part No.	Description	Remark			Ref.No.	Part No.	Description	Remark		
*A-1296-121-A A BOARD, COMPLETE *****						*A-1296-121-A A BOARD, COMPLETE *****					
CAPACITOR						CAPACITOR					
C258	1-108-749-91	MALAR	0.0015MF	5%	50V	C258	1-106-347-00	MALAR	0.0015MF	5%	50V
C505	1-106-184-00	MYLAR	0.0033MF	10%	100V	C505	1-106-355-12	MYLAR	0.0033MF	10%	100V
C521	1-106-198-00	MYLAR	0.012MF	10%	100V	C521	1-108-378-00	MYLAR	0.012MF	10%	100V
C542	1-108-835-00	MYLAR	0.0068MF	10%	50V	C542	1-108-237-00	MYLAR	0.0068MF	10%	50V
DIODE						DIODE					
D107	8-719-101-38	DIODE RD3.6E-L1				D107	8-719-101-39	DIODE RD3.6E-L2			
D201	8-719-102-99	DIODE RD13E-N1				D201	8-719-103-06	DIODE RD13E-N2			
D402	8-719-102-99	DIODE RD13E-N1				D402	8-719-103-06	DIODE RD13E-N2			
D502	8-719-156-07	DIODE RD5.6E-B				D502	8-719-100-35	DIODE RD5.6E-B2			
D503	8-719-102-72	DIODE RD5.6E-N3				D503	8-719-102-71	DIODE RD5.6E-N2			
D508	8-719-901-93	DIODE V19E				D508	8-719-918-77	DIODE V19G			
D515	8-719-901-93	DIODE V19E				D515	8-719-918-77	DIODE V19G			
D605	8-719-200-02	DIODE 10E2				D605	8-719-911-55	DIODE U05G			
*****						*****					
*1-617-796-11 M BOARD *****						*1-617-796-11 M BOARD *****					
DIODE						DIODE					
D001	8-719-311-23	DIODE SEL112NP-N				D001	8-719-101-08	DIODE SR108D			
D002	8-719-311-23	DIODE SEL112NP-N				D002	8-719-101-08	DIODE SR108D			
D004	8-719-311-23	DIODE SEL112NP-N				D004	8-719-101-08	DIODE SR108D			
*****						*****					
ACCESSORIES AND PACKING MATERIALS *****						ACCESSORIES AND PACKING MATERIALS *****					
Part No.	Description	Remark				Part No.	Description	Remark			
1-501-335-11	ANTENNA, TELESCOPIC (AN-18)					1-501-372-21	ANTENNA, TELESCOPIC				
*4-379-927-01	INDIVIDUAL CARTON					*4-379-938-01	INDIVIDUAL CARTON				
*4-379-928-01	CUSHION (UPPER) (ASSY)					*4-379-939-01	CUSHION (UPPER) (ASSY)				
*4-379-929-01	CUSHION (LOWER) (ASSY)					*4-379-940-01	CUSHION (LOWER) (ASSY)				



# SONY<sup>®</sup>

## SERVICE MANUAL







**US Model**  
Chassis No. SCC-754D-A

## CORRECTION-1

Correct the service manual as shown below.  
File this correction with the service manual.

 : indicates corrected portion

### 3-1. SAFETY RELATED ADJUSTMENTS: Page 10

Incorrect	Correct
<p> <b>R524 ADJUSTMENT (HOLD DOWN)</b></p> <p>When replacing the following components (marked with  on the schematic diagram), perform the adjustment as follows.</p> <p>R521, R522, R523, R524, R530, R534, C307, C524, D502, D512, T503, IC301</p> <ol style="list-style-type: none"> <li>Receive the dot signal PICTURE VR..... MIN BRIGHT VR..... MIN</li> <li>+B voltage check Confirm that the +B voltage (135V Line) is less than 136.2 Vdc during input of 130 <math>\begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix}</math> Vac.</li> <li>Protector voltage check Confirm that a voltage of 20.0 <math>\begin{smallmatrix} +1.3 \\ -1.7 \end{smallmatrix}</math> Vdc appears between TP85 and ground during input of 120 <math>\begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}</math> Vac.</li> <li>Operation check Confirm that the hold-down circuit operates (the raster diss appears) by adding 22.75 <math>\begin{smallmatrix} +0 \\ -0.05 \end{smallmatrix}</math> Vdc between TP85 and ground.</li> <li>Receive the dot signal.</li> <li>Short IC601 pins (3) and (4).</li> <li>Input of 120 <math>\begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}</math> Vac.</li> <li>Error operation check.</li> </ol>	<p> <b>R524 ADJUSTMENT (HOLD DOWN)</b></p> <p>When replacing the following components (marked with  on the schematic diagram), perform the adjustment as follows.</p> <p>R521, R522, R523, R524, R530, R534, C307, C524, D502, D512, T503, IC301</p> <ol style="list-style-type: none"> <li>Receive the dot signal PICTURE VR..... MIN BRIGHT VR..... MIN</li> <li>+B voltage check Confirm that the +B voltage (135V Line) is less than  137.2 Vdc during input of 130 <math>\begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix}</math> Vac.</li> <li>Protector voltage check Confirm that a voltage of 20.0 <math>\begin{smallmatrix} +1.3 \\ -1.7 \end{smallmatrix}</math> Vdc appears between TP85 and ground during input of 120 <math>\begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}</math> Vac.</li> <li>Operation check Confirm that the hold-down circuit operates (the raster diss appears) by less than 22.75 Vdc between TP85 and ground.</li> <li>Receive the dot signal.</li> <li>Short IC601 pins (3) and (4).</li> <li>Input of 120 <math>\begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}</math> Vac.</li> <li>Error operation check.</li> </ol>
<p><b>CHECK AFTER IC601 REPLACEMENT</b></p> <ol style="list-style-type: none"> <li>Supply 130 <math>\begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix}</math> Vac to with variable auto-transformer.</li> <li>Receive the dot signal.</li> <li>PICTURE VR..... MIN BRIGHT VR..... MIN</li> <li>Confirm that the +B voltage (135V Line) is less than 136.2 Vdc.</li> <li>If step 4 is not satisfied, replace IC601 in A board and repeat above steps.</li> </ol>	<p><b>CHECK AFTER IC601 REPLACEMENT</b></p> <ol style="list-style-type: none"> <li>Supply 130 <math>\begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix}</math> Vac to with variable auto-transformer.</li> <li>Receive the dot signal.</li> <li>PICTURE VR..... MIN BRIGHT VR..... MIN</li> <li> Confirm that the +B voltage (135V Line) is less than 137.2 Vdc.</li> <li>If step 4 is not satisfied, replace IC601 in A board and repeat above steps.</li> </ol>



Sony Corporation  
TV Group

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